

**A Historical Summary of Harvest, Age Composition,
and Escapement Data for Copper River Chinook
Salmon, 1969-1998**

by

Matthew J. Evenson

and

James W. Savereide

October 1999

Alaska Department of Fish and Game

Division of Sport Fish



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Weights and measures (metric)		General		Mathematics, statistics, fisheries	
centimeter	cm	All commonly accepted abbreviations.	e.g., Mr., Mrs., a.m., p.m., etc.	alternate hypothesis	H_A
deciliter	dL	All commonly accepted professional titles.	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
gram	g	and	&	catch per unit effort	CPUE
hectare	ha	at	@	coefficient of variation	CV
kilogram	kg	Compass directions:		common test statistics	F, t, χ^2 , etc.
kilometer	km	east	E	confidence interval	C.I.
liter	L	north	N	correlation coefficient	R (multiple)
meter	m	south	S	correlation coefficient	r (simple)
metric ton	mt	west	W	covariance	cov
milliliter	ml	Copyright	©	degree (angular or temperature)	°
millimeter	mm	Corporate suffixes:		degrees of freedom	df
Weights and measures (English)		Company	Co.	divided by	÷ or / (in equations)
cubic feet per second	ft ³ /s	Corporation	Corp.	equals	=
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	fork length	FL
inch	in	et alii (and other people)	et al.	greater than	>
mile	mi	et cetera (and so forth)	etc.	greater than or equal to	≥
ounce	oz	exempli gratia (for example)	e.g.,	harvest per unit effort	HPUE
pound	lb	id est (that is)	i.e.,	less than	<
quart	qt	latitude or longitude	lat. or long.	less than or equal to	≤
yard	yd	monetary symbols (U.S.)	\$, ¢	logarithm (natural)	ln
Spell out acre and ton.		months (tables and figures): first three letters	Jan,...,Dec	logarithm (base 10)	log
Time and temperature		number (before a number)	# (e.g., #10)	logarithm (specify base)	log ₂ , etc.
day	d	pounds (after a number)	# (e.g., 10#)	mideye-to-fork	MEF
degrees Celsius	°C	registered trademark	®	minute (angular)	'
degrees Fahrenheit	°F	trademark	™	multiplied by	x
hour (spell out for 24-hour clock)	h	United States (adjective)	U.S.	not significant	NS
minute	min	United States of America (noun)	USA	null hypothesis	H_0
second	s	U.S. state and District of Columbia abbreviations	use two-letter abbreviations (e.g., AK, DC)	percent	%
Spell out year, month, and week.				probability	P
Physics and chemistry				probability of a type I error (rejection of the null hypothesis when true)	α
all atomic symbols				probability of a type II error (acceptance of the null hypothesis when false)	β
alternating current	AC			second (angular)	"
ampere	A			standard deviation	SD
calorie	cal			standard error	SE
direct current	DC			standard length	SL
hertz	Hz			total length	TL
horsepower	hp			variance	Var
hydrogen ion activity	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

FISHERY DATA SERIES NO. 99-27

**A HISTORICAL SUMMARY OF HARVEST, AGE COMPOSITION
AND ESCAPEMENT INFORMATION OF COPPER RIVER
CHINOOK SALMON, 1969-1998**

by

Matthew J. Evenson

and

James W. Savereide

Division of Sport Fish, Fairbanks

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1599

October 1999

Development and publication of this manuscript were partially financed by the Federal Aid in Sport Fish Restoration Act (16 U.S.C. 777-777K) under Project F-10-14, Job No. S-3-1(c).

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*Matthew J. Evenson and James W. Savereide
Alaska Department of Fish and Game, Division of Sport Fish, Region III,
1300 College Road, Fairbanks, AK 99701-1599, USA*

This document should be cited as:

Evenson, M. J. and J. W. Savereide. 1999. A historical summary of harvest, age composition, and escapement information of Copper River chinook salmon, 1969-1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-27, Anchorage.

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ABSTRACT

This report compiles a summary of harvest, age composition, and escapement data for Copper River chinook salmon *Oncorhynchus tshawytscha*. These data originated in both published form, in a variety of different documents, as well as in unpublished form from personal computer files and field notes. This summary serves as a comprehensive reference for fishery managers and researchers and will be used in a University of Alaska graduate study involving catch-age analysis. All data used in this report were put into electronic data files and are archived for future use.

Key words: Copper River, chinook salmon, *Oncorhynchus tshawytscha*, age composition, harvest, aerial survey counts, escapement.

INTRODUCTION

The Copper River supports a large and commercially important run of chinook salmon *Oncorhynchus tshawytscha*. These fish are harvested by a commercial fishery operating in and near the mouth of the river and also by in-river subsistence, personal use (PU) and sport fisheries. The return is managed under guidelines established in four fishery management plans placed into regulation during the 1996 Alaska Board of Fisheries (BOF) meeting: 1) the *Copper River District Salmon Management Plan* (5 AAC 24.360); 2) the *Copper River Chinook Salmon Fishery Management Plan* (5 AAC 24.361); 3) the *Copper River Personal Use Dip Net Salmon Management Plan* (5 AAC 77.590); and, 4) the *Copper River Subsistence Salmon Fisheries Management Plans* (5 AAC 01.647). The plans include harvest allocations for the various fisheries, but none address chinook salmon specifically. The plans also mandate a drainage-wide escapement objective of 17,500 salmon other than sockeye salmon and regulate the commercial, PU, and sport fisheries to reduce the harvest potential of chinook salmon by 5%. However, the plans do not include fishery specific harvest goals or stock specific escapement objectives for chinook salmon, due largely to a paucity of information regarding chinook salmon escapements and inriver returns available at the time. During the 1996 meeting, the BOF imposed a sunset clause for plan (2) effective in 2002 at which time a new plan will be written based on new data collected by the Alaska Department of Fish and Game (ADF&G). In order to address the BOF's directive, a series of research programs have been, and will be, implemented prior to the 2002 meeting to gather data necessary to design and implement an improved management plan.

One of the research projects being conducted is a University of Alaska graduate program funded by ADF&G which will use catch-age analysis (Deriso et al. 1985) to estimate total returns of chinook salmon for all years that data are available. The model requires age-specific harvest estimates from the various fisheries. An auxiliary data input for the model will be in the form of escapement indices from a number of spawning streams. A great deal of information is available regarding harvest and age composition estimates as well as escapement counts for approximately 40 spawning streams. These data are archived in numerous publications as well as in unpublished documents and electronic data files. This report consolidates these data into a single document primarily for the purpose of summarizing data needed for the catch-age analysis, but also to provide a comprehensive reference for fishery managers and researchers.

METHODS

COMMERCIAL FISHERY

Post season harvest information from the commercial fishery is acquired through a fish ticket program administered by ADF&G Commercial Fisheries Division. Age composition estimates are generated from a shore-based sampling program in Cordova that is also administered by ADF&G Commercial Fisheries Division. These data are published annually in Prince William Sound Management Area annual finfish management reports (Pirtle et al. 1974-1980; Randall et al. 1981-1986; Brady et al. 1986-1990; Donaldson et al. 1992-1995; and, Morstad et al. 1996-1998). All age composition data are presented with the European formula, noted x.x. This notation represents the number of annuli formed during freshwater and ocean residence. For example, an age-5 salmon with a 1.3 European formula represents one year of brood, one annulus formed during freshwater residence and three annuli formed during ocean residence.

PERSONAL USE FISHERY

Harvest information for the PU fishery is acquired through mandatory returns of personal use salmon fishing permits issued by ADF&G Sport Fish Division. Permits must be turned in at the end of each fishing trip. Thus, time-specific harvest estimates are available over the entire span of the fishery each year. Summaries of annual harvest data are available in ADF&G-Sport Fish Division Area Management Reports (Szarzi 1996 and Taube *In press*). Time-specific harvest summaries are typically not available in published documents. These data are stored in electronic form in the Glennallen ADF&G office.

Collection of chinook salmon scales for aging is generally incidental to sampling of sockeye salmon *Oncorhynchus nerka* for coded wire tags. As a result, sample sizes are typically small. These data are not typically available in published documents, but are archived in electronic form at the Glennallen ADF&G office.

SUBSISTENCE FISHERY

Information on subsistence harvests is acquired through mandatory returns of subsistence salmon fishing permits issued by ADF&G. Permits must be turned in at the end of each fishing season. Summaries of annual harvest data are available in ADF&G-Sport Fish Division Area Management Reports (Szarzi 1996 and Taube *In press*). Age and sex composition estimates are sparse and the data are generally not published, but are archived in electronic form at the Glennallen ADF&G office.

SPORT FISHERY

Estimates of sport harvests by river system are generated from the annual Alaska statewide harvest survey, a mail-out questionnaire sent out to a sample of all sport fish license holders, and are available for all years 1977-1997 (Mills 1977-1994 and Howe et al. 1995-1998). Independent estimates of sport harvest are available from on-site creel censuses conducted on the Klutina River in 1989 (Potterville and Webster 1990) and on the Gulkana River in 1989 (Potterville and Webster 1990) and in 1996 (LaFlamme 1997). Age and sex composition information is sparse and is formally presented in Williams (1972, 1975, 1976, 1978), Potterville and Webster (1990), and LaFlamme (1997). Other unpublished data were acquired from field forms and scale samples archived in the Glennallen ADF&G office.

ESCAPEMENT

Escapement data are generally in the form of peak aerial survey counts. Nine streams are surveyed on an annual basis and peak counts are published annually in Prince William Sound Management Area annual finfish management reports (Pirtle et al. 1974-1980; Randall et al. 1981-1986; Brady et al. 1987-1991; Donaldson et al. 1992-1995; and, Morstad et al. 1996-1998). However, numerous other streams have been surveyed periodically in past years. These data are not available in a published form, but are archived in the Glennallen ADF&G office. An escapement estimate from a weir count in the Gulkana River in 1996 is given in LaFlamme (1997). Age and sex composition estimates are limited. The data that does exist appears in Potterville and Webster (1990) and from carcass surveys of select streams that were taken from field forms and scale cards stored in the Glennallen ADF&G office.

RESULTS

COMMERCIAL FISHERY

Annual harvests of chinook salmon from the Copper River gill net fishery are summarized in Table 1. The average yearly harvest is 34,883, with a low in 1980 of 8,454¹ and a peak in 1995 of 65,674. Age compositions of female, male, and all chinook salmon sampled are given in Tables 2-4, respectively. Age composition data were not reported from 1976 to 1979. Female and male chinook ranged from 2 to 8 years of age, with the majority being ages 5 and 6. Although female and male chinook share the same age range, the number of male chinook ages 2 and 8 is twice that of female chinook. Generally, the life history of Copper River chinook salmon appears to be 1-year of freshwater residence with 2-4 years of ocean residence.

PERSONAL USE FISHERY

Annual harvest of chinook salmon from the Copper River personal use fishery is summarized in Table 1. The average yearly harvest is 2,806, with a low in 1974 of 896 and a peak in 1998 of 6,719. Time-specific salmon harvests by day for each year are located in Appendix A. Age composition data are summarized in Table 5. Although the data available are limited, the age composition of personal use caught salmon is similar to that of commercially caught salmon.

The ages range from 3 to 7 years old with the majority being ages 5 and 6. The only difference is the lack of 2 and 8 year olds in the personal use catch.

SUBSISTENCE FISHERY

Annual harvests of chinook salmon from the Copper River subsistence fishery are summarized in Table 1. The average yearly reported harvest is 1,111 fish, with a low in 1974 of 400 and a peak in 1997 of 2,583. Age composition data are located in Table 6. Female and male chinook sampled ranged from 4 to 7 years of age with the majority being ages 5 and 6.

¹ The low catch in 1980 was due to an anticipated weak return of sockeye salmon. The ensuing management plan allowed harvest of chinook salmon while permitting only an incidental catch of sockeye salmon. Gill net mesh size was increased to a minimum of 8¼ in, weekly fishing time was reduced to two 6-h periods (down from 12-h), and the quota for chinook salmon over four weeks was only 10,000. Additionally, the fleet was hampered by bad weather.

Table 1.-Estimates of chinook salmon harvested by year and fishery in the Copper River, 1974-1998.

Year	Commercial ^a	Personal Use ^b	Subsistence ^b	Sport ^c	Total
1974	18,980	896	400		20,276
1975	19,644	1,005	973		21,622
1976	31,479	1,279	1,056		33,814
1977	21,722	1,698	857	532 ^e	24,809
1978	29,062	1,786	453	641 ^e	31,942
1979	17,678	1,820	1,596	2,948	24,042
1980	8,454 ^d	2,190	845	2,101	13,590
1981	20,178	1,824	585	1,717	24,304
1982	47,362	2,083	681	1,802	51,928
1983	52,500	4,675	1,275	2,579	61,029
1984	38,957	1,760	509	2,787	44,013
1985	42,214	1,329	629	1,939	46,111
1986	40,670	2,367	686	3,663	47,386
1987	41,001	2,968	813	2,301	47,083
1988	30,741	2,994	992	1,562	36,289
1989	30,863	2,251	787	2,219	36,120
1990	21,702	2,708	647	2,232	27,289
1991	34,787	4,056	1,328	4,427	44,598
1992	39,810	3,405	1,449	3,997	48,661
1993	29,727	2,846	1,434	7,620	41,627
1994	47,061	3,743	1,989	6,431	59,224
1995	65,675	4,707	1,892	6,709	78,983
1996	55,646	3,584	1,482	7,113	67,825
1997	51,273	5,447	2,583	8,868	68,171
1998		6,719	1,842		8,561
Average	34,883	2,806	1,111	3,533	40,372

^a Data from Pirtle et al. (1975-1980); Randall et al. (1981-1986); Brady et al. (1987-1991); Donaldson et al. (1992-1995); and Morstad (1996-1998).

^b Data from Szarzi (1996) and Taube (*In press*).

^c Data from Mills et al. (1977-1994) and Howe et al. (1995-1998).

^d Gear restrictions combined with bad weather and a sudden drop in fishing effort during the final week led to the low catch.

^e Harvest of chinook salmon from the sport fishery is low due to a lack of fishing effort.

Table 2.-Estimated age composition of female chinook salmon harvested from the Copper River commercial fishery^a, 1974, 1975, and 1980-1997.

Females		Age 2		Age 3		Age 4			Age 5			Age 6			Age 7			Age 8		Total	
Year	Sample	0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	0.5	1.4	2.3	3.2	1.5	2.4	3.3	2.5		3.4
1974	59					643			2,574				7,720								10,937
1975	111					177			4,778				6,017								10,972
1980	219								1,543	39			2,392	425			232				4,630
1981	135				154				4,619				2,925				769				8,466
1982	2,080					732			12,462	82			4,606	1,644		26	773				20,325
1983	3,165					337			18,522				6,651	40		16	34				25,600
1984	2,387				15	631	9		7,621	88			9,480	1,048		9	567	41			19,509
1985	2,830		28		28	1,321			7,769	35			12,742	188		28	427				22,566
1986	2,766		14			959		19	13,629	26			6,599	962		100	306	20			22,634
1987	2,576					424			9,992				7,627	428		82	235				18,788
1988	1,752					252			3,099				8,404	464		18	644				12,881
1989	1,557					208		14	3,234				6,887	1,180		106	2,445		62		14,135
1990	1,594			18		194			3,095	69			6,300	270	23	93	1,064	18	18		11,129
1991	1,596		42	9	88	264		127	12,093	51			5,964	284	9	135	202				19,267
1992	1,996				64	382		92	3,178	89			16,779	388	29	137	1,167		21	29	22,357
1993	2,043		36			576		18	11,221	45		9	3,990	380		179	163				16,616
1994	1,999					862		36	11,223				13,825	39		62	76				26,123
1995	2,118					912			22,483				13,985	317		211	20				37,927
1996	1,729					585			16,568				14,209	185		24	41				31,613
1997	1,805																				

^a Data from Pirtle et al. (1975-1976); Randall et al. (1981-1986); Brady et al. (1987-1991); Donaldson et al. (1992-1995); and, Morstad et al. (1996-1998).

Table 3.-Estimated age composition of male chinook salmon harvested from the Copper River commercial fishery^a, 1974, 1975, and 1980-1997.

Year	Males Sample	Age 2		Age 3		Age 4			Age 5			Age 6		Age 7			Age 8		Total	
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	0.5	1.4	2.3	3.2	1.5	2.4	3.3		2.5
1974	59					322		1,608				5,791				322				8,043
1975	111					354		3,009				4,955			354					8,672
1980	219					77		849				2,276	231		77	270			39	3,819
1981	135				616	1,078		4,156				5,542	154			770				12,316
1982	2,080		51	107	18	2,956		13,535	386			7,823	2,456		22	1,483				28,837
1983	3,165			22		1,593		13,375	18			9,328	38			47				24,421
1984	2,387					256		5,430	80			12,434	565		9	654	18			19,446
1985	2,830		28		15	1,495		62	4,425	35		13,130	155		199	223				19,767
1986	2,766		14			1,381		19	8,140	20		7,374	631		143	314				18,036
1987	2,576					741		15	9,210	20		11,387	497		119	224				22,213
1988	1,752		12	12	12	375		12	3,554	12		12,599	507		37	728				17,860
1989	1,557			45		550	62		3,121	84		8,882	708		536	2,625			59	16,672
1990	1,594		54	48	5	1,068	46		2,340	243		5,348	189	18	288	800			49	10,496
1991	1,596	9	38	78	86	865	33	69	7,346	114		5,862	238		204	215			24	15,180
1992	1,996			50		1,314		48	1,809	176	19	12,025	134	7	227	774			29	16,614
1993	2,043		71	45	12	1,356		18	7,412	12		3,334	160		200	161				12,782
1994	1,999		39	13		1,280			5,447			9,563	36		129	59				16,565
1995	2,118			184		2,926			12,644	82		11,120	143		423	20				27,544
1996	1,729			327		2,958	82		9,030	250	41	9,796	178		49	210			23	22,942
1997	1,805																			

^a Data from Pirtle et al. (1975-1976); Randall et al. (1981-1986); Brady et al. (1987-1991); Donaldson et al. (1992-1995); and, Morstad et al. (1996-1998).

Table 4.-Estimated age composition of all chinook salmon harvested from the Copper River commercial fishery^a, 1974, 1975, and 1980-1997.

Year	Total Sample	Age 2		Age 3		Age 4			Age 5			Age 6		Age 7			Age 8		Total	
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	0.5	1.4	2.3	3.2	1.5	2.4	3.3		2.5
1974	59					965			4,182				13,511				322			18,980
1975	111					531			7,787				10,972			354				19,644
1980	219					77			2,392	39			4,668	656		77	502		39	8,449
1981	135				770	1,078			8,775				8,467	154			1,539			20,782
1982	2,080		51	107	18	3,688			25,997	468			12,429	4,100		48	2,256			49,162
1983	3,165			22		1,930			31,897	18			15,979	78		16	81			50,022
1984	2,387				15	887	9		13,051	168			21,914	1,613		18	1,221	59		38,955
1985	2,830		56		43	2,816		62	12,184	70			25,872	343		227	650			42,323
1986	2,766		28			2,340		38	21,769	46			13,973	1,593		243	620	20		40,670
1987	2,576					1,165		15	19,202	20			19,014	925		201	459			41,001
1988	1,752		12	12	12	627		12	6,653	12			21,003	972		55	1,371			30,741
1989	1,557			45		758	62	14	6,354	84			15,797	1,888		642	5,098		120	30,863
1990	1,594		54	66	5	1,262	46		5,435	279			11,713	459	41	381	1,875	18	68	21,702
1991	1,596	9	80	87	173	1,139	42	197	19,642	164			11,930	522	9	353	417		24	34,787
1992	1,996			50	64	1,696		140	5,112	266	19		29,487	522	36	364	1,970		21	39,805
1993	2,043		106	45	12	1,963		35	18,820	57	9		7,417	540		397	324			29,727
1994	1,999		39	13		2,142		36	16,745				23,513	98		192	136			42,913
1995	2,118			184		3,869			35,280	82			25,125	460		634	40			65,675
1996	1,729			327		3,636	82		25,988	273	41		24,590	363		73	250		23	55,646
1997	1,806			129		4,794			29,537				15,921	582		75	236			51,273

^a Data from Pirtle et al. (1975-1976); Randall et al. (1981-1986); Brady et al. (1987-1991); Donaldson et al. (1992-1995); and, Morstad et al. (1996-1998).

Table 5.-Age composition of chinook salmon sampled from the personal use fishery^a, 1992-1998.

Females		Age 3	Age 4	Age 5		Age 6		Age 7	Total
Year	Sample Dates	1.1	1.2	1.3	2.2	1.4	2.3	2.4	
1992	6 June-18 July		5	13		36			54
1993	4 June-20 June		3	18		8	2	3	34
1994	10 June-16 July		1	15		12		1	29
1995	2 June-14 July		7	47		11		1	66
1996	8 June-11 Aug		2	15		11	2		30
1997	6 June-22 Aug		4	53		11	2		70
1998	6 June-8 Aug		2	43		17			62

Males		Age 3	Age 4	Age 5		Age 6		Age 7	Total
Year	Sample Dates	1.1	1.2	1.3	2.2	1.4	2.3	2.4	
1992	6 June-18 July	3	4	5	1	22	1		36
1993	4 June-20 June		3	11		8	1		23
1994	10 June-16 July		3	15		12			30
1995	2 June-14 July		4	27		11	1		43
1996	8 June-11 Aug	2	2	11		7			22
1997	6 June-22 Aug		4	39		25	1	1	70
1998	6 June-8 Aug		2	32		16			50

Total		Age 3	Age 4	Age 5		Age 6		Age 7	Total
Year	Sample Dates	1.1	1.2	1.3	2.2	1.4	2.3	2.4	
1992	6 June-18 July	3	9	18	1	58	1		90
1993	4 June-20 June		6	29		16	3	3	57
1994	10 June-16 July		4	30		24		1	59
1995	2 June-14 July		11	74		22	1	1	109
1996	8 June-11 Aug	2	4	26		18	2		52
1997	6 June-22 Aug		8	92		36	3	1	140
1998	6 June-8 Aug		4	75		33			112

^a Unpublished data.

Table 6.-Age composition of chinook salmon sampled from the subsistence fishery^a, 1993-1998.

Females		Age 4	Age 5		Age 6	Age 7	Total
Year	Sample Dates	1.2	1.3	2.2	1.4	2.4	
1993	20-Jun	1	4		1	1	7
1994	7-Jul				1		1
1995	3 June-30 June	2	6		4		12
1996	2 June-3 June		2				2
1997	5 June-6 June		1				1
1998	4 June-7June	1	1				2

Males		Age 4	Age 5		Age 6	Age 7	Total
Year	Sample Dates	1.2	1.3	2.2	1.4	2.4	
1993	20-Jun		3		1		4
1994	7-Jul	2					2
1995	3 June-30 June	1	8		1		10
1996	2 June-3 June		2	1	1		4
1997	5 June-6 June		2				2
1998	4 June-7June						0

Total		Age 4	Age 5		Age 6	Age 7	Total
Year	Sample Dates	1.2	1.3	2.2	1.4	2.4	
1993	20-Jun	1	7		2	1	11
1994	7-Jul	2			1		3
1995	3 June-30 June	3	14		5		22
1996	2 June-3 June		4	1	1		6
1997	5 June-6 June		3				3
1998	4 June-7June	1	1				2

^a Unpublished data.

SPORT FISHERY

Annual harvests of chinook salmon from the Copper River sport fishery are summarized in Table 1. The average yearly harvest is 3,533, with a low in 1977 of 532 and a peak in 1997 of 8,868. Annual harvest of chinook salmon by fishery is given in Table 7. The three main fisheries include the Gulkana, Klutina, and Tonsina rivers, with minor fisheries in the Copper River (likely near the mouths of these tributaries) and in Paxson Lake (likely in the outlet stream that feeds into the Gulkana River). The Gulkana River is the largest of the sport fisheries and has an average harvest of 2,466, a low in 1977 of 421, and a peak in 1993 of 5,864. The Klutina River sport fishery essentially began in 1983 and harvest averages 1,325 chinook salmon annually, with a low in 1983 of 147 and a peak in 1997 of 3,581. In contrast, the Tonsina River sport fishery, which started in 1991, averages 242 chinook salmon annually with a peak of 539 in 1995. Annual catch (includes harvested and released fish) of chinook salmon by fishery is available since 1991 and is summarized in Table 8. Catch statistics range from 140 chinook in the Tonsina River in 1991 to 15,558 chinook salmon in the Gulkana River in 1993. The largest sport catch is found on the Gulkana River. However, over the last few years the sport catch on the Klutina River has increased dramatically.

Age compositions of chinook salmon sampled from the Gulkana River are given in Table 9. Sampling of the sport fishery has been sparse and infrequent. When possible, data were divided into male and female chinook salmon. The salmon sampled ranged from 4 to 7 years of age, with the majority being 5 and 6. Age composition of chinook salmon sampled from the Klutina River can be found in Table 10. Again, the chinook salmon sampled range in ages from 4 to 7, with the majority being 5 and 6.

ESCAPEMENT

Historical aerial survey data for the Copper River drainage were collected for six geographical areas: Chitina (Table 11), Tonsina (Table 12), Klutina (Table 13), Tazlina (Table 14), Gulkana (Table 15) and the upper Copper River (Table 16). Five of these drainages are used for aerial indices of escapement: Tonsina, Klutina, Tazlina, Gulkana, and the Chistochina, which is a component of the upper Copper River. The peak aerial counts in nine streams were chosen to represent escapement in the five drainages. Escapement objectives expressed as peak aerial survey counts by stream are listed below.

Drainage	Stream Segments(s)	Peak Survey Timing	Objective
Chistochina	East Fork Chistochina	17 – 31 July	500
Gulkana ²	Indian		
	West Fork-Middle Fork	22 July – 5 August	1,250
	West Fork		
	Middle Fork		
	East Fork		
Tazlina	Lower Mainstem		
	Kiana	17 July – 2 August	350
Klutina	Mendeltna		
	Manker	17 July – 2 August	250
Tonsina	Saint Anne		
	Little Tonsina	25 July – 8 August	350
	Greyling		

² The stream segments for the Gulkana River are considered collectively and are counted as one stream.

Table 7.-Estimated chinook salmon sport fish harvest from the Upper Copper River drainage^a, 1977-1997.

Year	Gulkana River	Klutina River	Tonsina River	Copper River	Paxson Lake
1977	421				
1978	606				
1979	2,440				
1980	1,688				
1981	1,469				
1982	1,603				
1983	2,224	147			
1984	1,676	616			222
1985	1,256	249		236	
1986	2,833	710			
1987	1,631	495			
1988	1,033	483			
1989	1,551	606			
1990	3,661	1,440			
1991	2,667	1,588	83		
1992	2,833	952	125		
1993	5,864	1,955	172		
1994	3,692	2,179	349		
1995	3,556	2,466	539		
1996	4,078	2,407	283		
1997	5,005	3,581	145		
Average	2,466	1,325	242	236	222

^a Data from Mills et al. (1977-1994) and Howe et al. (1995-1998).

Table 8.-Estimated chinook salmon sport fish catch from the Upper Copper River drainage^a, 1991-1997.'

Year	Gulkana River	Klutina River	Tonsina River	Paxson Lake
1991	5,989	2,915	140	
1992	6,829	3,434	187	
1993	15,558	4,508	614	
1994	6,518	3,797	698	10
1995	7,848	4,987	1,102	
1996	9,871	5,102	548	
1997	15,552	9,310	436	121

^a Data from Mills et al. (1992-1994) and Howe et al. (1995-1998).

Table 9.-Age composition of chinook salmon sampled from the Gulkana River sport fishery (1972, 1973, 1975, 1976, 1978, 1988-1991, and 1996)^a.

1972							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Total	1	27	5	0	0	0	33
1973							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Total		20	18	0	0	0	38
1975							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Total	3	58	32	0	0	0	93
1976							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Total	13	31	6	0	0	0	50
1978							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Total	11	27	16	0	0	0	54
1988							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	4	34	25	1	1	1	66
Males	3	40	7	1	0	0	51
Total	7	74	32	2	1	1	117

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Table 9.-Page 2 of 2.

1989							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	0	11	22		2	0	35
Males	1	6	20		1	0	28
Total	1	17	42		3	1	64
1990							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	0	20	11	0	0	0	31
Males	0	15	9	0	0	0	24
Total	0	35	20	0	0	0	55
1991							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	0	3	1	0	0	0	4
Males	0	2	3	0	0	0	5
Total	0	5	4	0	0	0	9
1996							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	0	6	0	0	0	0	6
Males	0	6	0	0	0	0	6
Total	0	12	0	0	0	0	12

^a Data from Williams (1972, 1973, 1975, 1976, and 1978); Potterville and Webster (1990); Taube (*In press*); and, LaFlamme 1997.

Table 10.-Age composition of chinook salmon sampled from the Klutina River sport fishery, 1989-1991.

1989 ^a							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	0	18	65	0	3	1	87
Males	3	29	57	0	1	0	90
Total	3	47	122	0	4	1	177
1990 ^b							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	19	37	1	0	0	0	57
Males	15	21	0	0	2	0	38
Total	34	58	1	0	2	0	95
1991 ^b							
	Age 4	Age 5	Age 6		Age 7		Total
	1.2	1.3	1.4	2.3	1.5	2.4	
Females	0	267	224	0	0	0	491
Males	0	187	162	0	2	0	351
Total	0	454	386	0	2	0	842

^a Data from Potterville and Webster 1990.

^b Unpublished data.

Table 11.-Chitina River drainage historic aerial survey counts^a for chinook salmon.

Date	Stream	Count of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/3/83	Monahan Cr.	2		2			
8/6/85	Monahan Cr.	5		5	2	3	3
8/18/78	Tana seeps	10		10			
8/3/79	Tana seeps	13		13			
8/13/79	Tana seeps	13		13			
8/2/82	Tana seeps	10		10			
7/30/92	Tana seeps	10		10	3	1	1
8/17/73	Tebay R.	800		800			
8/15/80	Tebay R.	5		5			
8/3/83	Tebay R.	11		11			
8/6/85	Tebay R.	19		19	2	4	4

^a Unpublished data.

^b Survey conditions were judged on a five point scale where one is good and five is poor.

Table 12.-Tonsina River drainage historic aerial survey counts^a for chinook salmon.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/5/76	Bernard Cr.	8		8			
7/31/81	Bernard Cr.	21		21			
7/25/83	Bernard Cr.	46		46			
7/30/84	Bernard Cr.	39		39	3	1	2
8/5/85	Bernard Cr.	21		21	2	1	2
7/30/86	Bernard Cr.	32		32	2	1	1
7/27/87	Bernard Cr.	9		9	1	1	1
7/27/88	Bernard Cr.	18		18	3	1	3
8/2/90	Bernard Cr.	8	1	9	3	1	2
7/26/91	Bernard Cr.	26		26	2	1	2
8/11/92	Bernard Cr.	3		3	3	1	2
7/25/83	Dust Cr.	64		64			
7/30/84	Dust Cr.	48	4	52	2	2	2
8/5/85	Dust Cr.	5		5	3	1	2
7/30/86	Dust Cr.	28		28	2	1	
7/27/87	Dust Cr.	1		1	1	1	1
7/27/88	Dust Cr.	11		11	3	2	3
8/2/90	Dust Cr.	2		2	3	1	2
7/26/91	Dust Cr.	9		9	1	1	1
8/10/69	Grayling Cr.	7		7			
8/4/71	Grayling Cr.	45		45			1
8/7/72	Grayling Cr.	47		47			
7/31/73	Grayling Cr.	47		47			
9/4/74	Grayling Cr.	15		15			
7/30/74	Grayling Cr.	49		49			
8/5/76	Grayling Cr.	17		17			
8/2/78	Grayling Cr.	92		92			

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Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/3/79	Grayling Cr.	153		153			
8/10/80	Grayling Cr.	66		66	3	3	3
7/31/81	Grayling Cr.	107		107			
8/2/82	Grayling Cr.	124		124			
7/21/83	Grayling Cr.	169		169			
7/25/83	Grayling Cr.	287		287			
7/30/84	Grayling Cr.	234	45	279	2	2	2
8/5/85	Grayling Cr.	57	1	58	2	3	2
7/30/86	Grayling Cr.	219	5	224	2	2	2
7/27/87	Grayling Cr.	111	1	112	1	2	
7/27/88	Grayling Cr.	161	6	167	3	3	3
8/4/89	Grayling Cr.	13	1	14	2	3	3
7/28/89	Grayling Cr.	72	6	78	1	3	2
8/2/90	Grayling Cr.	49	3	52	2	2	2
7/27/90	Grayling Cr.	46	2	48	3	3	3
7/26/91	Grayling Cr.	151	8	159	3	2	3
8/11/92	Grayling Cr.	11	6	17	3	3	3
8/11/94	Grayling Cr.	2		2	1	1	1
8/8/95	Grayling Cr.	24	2	26			
7/17/96	Grayling Cr.	160	3	163			
7/19/97	Grayling Cr.	330		330			
7/18/98	Grayling Cr.	527		527			
7/24/98	Grayling Cr.	247	5	252	1	1	1
8/4/71	Little Tonsina R.	4		4			4
7/30/74	Little Tonsina R.	56		56			
8/2/78	Little Tonsina R.	285		285			

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Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/3/79	Little Tonsina R.	285		285			
8/10/80	Little Tonsina R.	70		70	2	2	2
7/31/81	Little Tonsina R.	191		191			
8/2/82	Little Tonsina R.	440		440			
7/25/83	Little Tonsina R.	330		330			
7/30/84	Little Tonsina R.	528	40	568	2	2	2
8/5/85	Little Tonsina R.	195	8	203	2	3	3
7/30/86	Little Tonsina R.	418	6	424	2	3	2
7/27/87	Little Tonsina R.	245	2	247	1	3	3
7/27/88	Little Tonsina R.	75	3	78	3	4	4
8/4/89	Little Tonsina R.	65	3	68	3	3	3
7/19/89	Little Tonsina R.	35		35	1	2	2
8/2/90	Little Tonsina R.	28	6	34	2	2	3
7/27/90	Little Tonsina R.	57		57	3		
7/26/91	Little Tonsina R.	54	5	59	3	3	3
8/11/92	Little Tonsina R.	8	45	53	3	3	3
7/30/92	Little Tonsina R.	105	2	107	3	3	3
8/11/94	Little Tonsina R.	2	2	4	1	1	1
8/8/95	Little Tonsina R.	25		25			
7/17/96	Little Tonsina R.	30		30			
7/19/97	Little Tonsina R.	55		55			
7/24/98	Little Tonsina R.	59	1	60	1	2	2

^a Unpublished data.

^b Survey conditions were judged on a five point scale where one is good and five is poor.

Table 13.-Klutina River drainage historic aerial survey counts^a for chinook salmon.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
9/13/68	Klutina R.	19		19			
7/26/74	Mahlo Cr.	3		3			
7/31/81	Mahlo Cr.	1		1			
7/25/83	Mahlo Cr.	6		6			
7/30/84	Mahlo Cr.	12		12	2	1	1
8/5/85	Mahlo Cr.	3		3	2	2	2
7/27/87	Mahlo Cr.	8		8	1	5	
7/28/89	Mahlo Cr.	7		7	1	1	1
7/27/90	Mahlo Cr.	1		1	3	1	2
7/26/91	Mahlo Cr.	2		2	3	1	1
8/3/70	Manker Cr.	17		17			
8/4/71	Manker Cr.	30		30			1
8/7/72	Manker Cr.	4		4			
7/31/73	Manker Cr.	17		17			
7/26/74	Manker Cr.	29		29			
7/30/74	Manker Cr.	29		29			
8/5/76	Manker Cr.	6		6			
7/30/77	Manker Cr.	15		15			
8/2/78	Manker Cr.	20		20			
8/3/79	Manker Cr.	16		16			
8/10/80	Manker Cr.	35		35	3	3	3
7/31/81	Manker Cr.	33		33			
8/2/82	Manker Cr.	49		49			
7/21/83	Manker Cr.	53		53			
7/25/83	Manker Cr.	141		141			
7/30/84	Manker Cr.	219	45	264			
8/5/85	Manker Cr.	22	0	22	2	2	2

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Table 13.-Page 2 of 3.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/30/86	Manker Cr.	236	15	251	1	1	1
7/27/87	Manker Cr.	137	4	141	1	1	1
7/27/88	Manker Cr.	115	4	119	3	1	2
7/13/89	Manker Cr.	97		97	2	1	1
7/19/89	Manker Cr.	165		165	2	1	1
7/27/90	Manker Cr.	41	2	43	3	1	2
8/2/90	Manker Cr.	20		20	2	1	2
7/26/91	Manker Cr.	101	6	107	3	2	3
8/11/92	Manker Cr.	13	1	14	3	1	2
7/25/94	Manker Cr.	75		75	1	2	2
8/11/94	Manker Cr.	15		15	1	1	1
8/8/95	Manker Cr.	8		8			
7/17/96	Manker Cr.	192	2	194			
7/20/97	Manker Cr.	185	21	206			
7/18/98	Manker Cr.	828	15	843			
7/24/98	Manker Cr.	207	11	218	1	1	2
8/3/70	St. Anne Cr.	35		35			
8/4/71	St. Anne Cr.	4		4			1
8/7/72	St. Anne Cr.	25		25			
7/26/74	St. Anne Cr.	32		32			
7/30/74	St. Anne Cr.	1		1			
7/13/76	St. Anne Cr.	15		15			
7/30/77	St. Anne Cr.	10		10			
7/30/77	St. Anne Cr.	10		10			
8/2/78	St. Anne Cr.	24		24			
8/3/79	St. Anne Cr.	16		16			
8/10/80	St. Anne Cr.	8		8	3	3	3

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Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/31/81	St. Anne Cr.	19		19			
8/2/82	St. Anne Cr.	35		35			
7/21/83	St. Anne Cr.	17		17			
7/25/83	St. Anne Cr.	87		87			
7/29/84	St. Anne Cr.	89		89	2	1	1
8/5/85	St. Anne Cr.	7		7	3	3	3
8/6/85	St. Anne Cr.	14	1	15	1	2	2
7/30/86	St. Anne Cr.	182		182	1	1	1
7/27/87	St. Anne Cr.	192		192	1	1	1
7/27/88	St. Anne Cr.	62	2	64	2	3	3
7/13/89	St. Anne Cr.	16		16	2	1	1
7/19/89	St. Anne Cr.	90		90	2	1	2
7/28/89	St. Anne Cr.	85	2	87	1	2	2
7/27/90	St. Anne Cr.	25	1	26	3	2	3
8/2/90	St. Anne Cr.	42	1	43	2	1	2
7/26/91	St. Anne Cr.	115	15	130	2	2	2
8/11/92	St. Anne Cr.	12		12	2	3	3
7/25/94	St. Anne Cr.	250		250	1	2	2
8/11/94	St. Anne Cr.	3		3	1	1	1
8/8/95	St. Anne Cr.	25	1	26			
7/17/96	St. Anne Cr.	10		10			
7/19/97	St. Anne Cr.	900		900			
7/18/98	St. Anne Cr.	515		515			
7/24/98	St. Anne Cr.	237		237	1	1	1
7/24/98	St. Anne Cr.	186		186	3	1	2

^a Unpublished data.

^b Survey conditions were judged on a five point scale where one is good and five is poor.

Table 14.-Tazlina River drainage historic aerial survey counts^a for chinook salmon.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/3/70	Kiana Cr.	162		162			
8/4/71	Kiana Cr.	81		81			1
8/7/72	Kiana Cr.	89		89			
7/31/73	Kiana Cr.	172		172			
7/26/74	Kiana Cr.	55		55			
7/30/74	Kiana Cr.	46		46			
8/6/76	Kiana Cr.	37		37			2
7/30/77	Kiana Cr.	91		91			
7/30/77	Kiana Cr.	91		91			
8/2/78	Kiana Cr.	125		125			
8/25/78	Kiana Cr.	2		2			
8/3/79	Kiana Cr.	279		279			
7/22/80	Kiana Cr.	247		247			
8/10/80	Kiana Cr.	79		79	3	3	3
7/31/81	Kiana Cr.	191		191			
8/2/82	Kiana Cr.	200		200			
7/21/83	Kiana Cr.	165		165			
7/25/83	Kiana Cr.	166		166			
7/29/84	Kiana Cr.	191		191	2	3	3
7/30/84	Kiana Cr.	379	3	382	2	1	1
8/5/85	Kiana Cr.	37		37	3	5	3
8/9/85	Kiana Cr.	91		91	2	1	1
7/30/86	Kiana Cr.	327		327	1	1	1
7/27/87	Kiana Cr.	80		80	1	2	2
7/27/88	Kiana Cr.	249		249	3	2	2
7/13/89	Kiana Cr.	285		285	1	2	2
7/19/89	Kiana Cr.	295		295	2	1	2

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Table 14.-Page 2 of 4.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/28/89	Kiana Cr.	344	1	345	1	1	1
6/26/90	Kiana Cr.	250		250	1	1	1
7/3/90	Kiana Cr.	45		45	1	2	1
7/27/90	Kiana Cr.	10		10	3	1	2
8/2/90	Kiana Cr.	411	3	414	3	1	2
8/14/90	Kiana Cr.	45	10	55			
7/5/91	Kiana Cr.	22		22	3	2	3
7/25/91	Kiana Cr.	520	2	522	2	1	1
8/2/91	Kiana Cr.	448		448	1	1	2
8/11/92	Kiana Cr.	75	4	79	2	2	2
7/25/94	Kiana Cr.	430		430	1	2	2
8/8/95	Kiana Cr.	110		110			
7/17/96	Kiana Cr.	510		510			
7/20/97	Kiana Cr.	450	5	455			
7/18/98	Kiana Cr.	700		700			
7/20/98	Kiana Cr.	520	2	522	1	1	1
9/9/68	Mendeltna Cr.	11		11			
8/4/71	Mendeltna Cr.	56		56			1
7/30/72	Mendeltna Cr.	6		6			
8/7/72	Mendeltna Cr.	49		49			
7/31/73	Mendeltna Cr.	15		15			
7/26/74	Mendeltna Cr.	13		13			
7/30/74	Mendeltna Cr.	15		15			
7/13/76	Mendeltna Cr.	35		35			
7/30/77	Mendeltna Cr.	73		73			
7/30/77	Mendeltna Cr.	73		73			
8/2/78	Mendeltna Cr.	52		52			

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Table 14.-Page 3 of 4.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/3/79	Mendeltna Cr.	5		5	3	3	3
8/10/80	Mendeltna Cr.	3		3	3	3	3
7/31/81	Mendeltna Cr.	51		51			
7/7/82	Mendeltna Cr.	70		70			
8/2/82	Mendeltna Cr.	5		5			
7/1/83	Mendeltna Cr.	12		12			
7/21/83	Mendeltna Cr.			0			
7/22/83	Mendeltna Cr.	4		4			
8/3/84	Mendeltna Cr.	1	1	2	3	3	3
8/5/85	Mendeltna Cr.	3		3	3	3	3
8/9/85	Mendeltna Cr.	26		26	2	3	3
7/30/86	Mendeltna Cr.	76		76	1	2	2
7/27/87	Mendeltna Cr.	10		10	1	3	3
6/30/89	Mendeltna Cr.	55		55	2	1	2
7/13/89	Mendeltna Cr.	143		143	2	1	2
7/19/89	Mendeltna Cr.	175		175	2	1	2
7/28/89	Mendeltna Cr.	185	2	187	1	2	2
6/26/90	Mendeltna Cr.	45		45	1	1	1
7/3/90	Mendeltna Cr.	175		175	1	2	1
7/27/90	Mendeltna Cr.	7		7	3	2	3
8/2/90	Mendeltna Cr.	320	3	323	3	1	2
8/14/90	Mendeltna Cr.	148	12	160			
7/5/91	Mendeltna Cr.	125		125	3	3	3
7/25/91	Mendeltna Cr.	305	5	310	2	2	2
8/2/91	Mendeltna Cr.	180	4	184	1	3	1
8/11/92	Mendeltna Cr.	38	45	83	3	3	3
7/25/94	Mendeltna Cr.	120		120	1	2	2

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Table 14.-Page 4 of 4.

Date	Stream	Counts of Chinook Salmon			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
8/17/94	Mendeltna Cr.	35		35	1	1	1
8/17/94	Mendeltna Cr.	1		1	1	1	1
8/8/95	Mendeltna Cr.	30	2	32			
8/8/95	Mendeltna Cr.		9	9			
7/17/96	Mendeltna Cr.	370		370			
7/20/97	Mendeltna Cr.	350		350			
7/18/98	Mendeltna Cr.	280		280			
7/20/98	Mendeltna Cr.	105		105	1	2	1

^a Unpublished data.

^b Survey conditions were judged on a five point scale where one is good and five is poor.

Table 15.-Gulkana River drainage historic aerial survey counts^a for chinook salmon.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
6/27/69	Gulkana (Sourdough to W.Fork)			0			
6/28/69	E. Fork (Paxson to Summit)	105		105			
7/15/69	Gulkana (Mouth to W. Fork)	54		54			
7/15/69	Gulkana (W. Fork to M. Fork)	70		70			
7/15/69	M. Fork (Unspecified)	28		28			
7/15/69	E. Fork (Paxson to Summit)	124		124			
6/24/70	Gulkana (Unspecified)	875		875			2
7/5/70	Gulkana (Unspecified)	72		72			2
7/21/70	Gulkana (Mouth to W. Fork)	280		280			
7/21/70	E. Fork (Mouth to Paxson)	19		19			
6/27/71	Gulkana (Mouth to W. Fork)	364		364		3	
7/7/71	Gulkana (W. Fork to M. Fork)	195		195			
7/7/71	M. Fork (Unspecified)	175		175			
7/17/71	Gulkana (W. Fork to M. Fork)	195		195			4
7/17/71	M. Fork (Unspecified)	175		175			2
7/21/71	Gulkana (Mouth to W. Fork)	2		2			4
7/21/71	Gulkana (W. Fork to M. Fork)	65		65			4
7/30/71	Gulkana (W. Fork to M. Fork)	29		29			1
7/30/71	M. Fork (Unspecified)	240		240			1
6/26/72	Gulkana (Unspecified)	985		985			2
7/26/72	M. Fork (Swede to Dickey)	70		70			2
7/30/72	Gulkana (Mouth to W. Fork)	6		6			4
7/30/72	Gulkana (W. Fork to M. Fork)	992		992			3
7/30/72	M. Fork (Unspecified)	195		195			2
7/30/72	E. Fork (Mouth to Paxson)	13		13			2
7/23/73	Gulkana (Unspecified)	482		482			
7/23/73	West Fork (Moose Cr.)	2		2			
7/23/73	W. Fork (Keg Cr.)	1		1			
7/23/73	M. Fork (Unspecified)	110		110			
7/23/73	M. Fork (Hungry Hollow)	28		28			
7/23/73	W. Fork (Twelve Mile Cr.)	1		1			
7/17/74	Gulkana (Unspecified)	151		151			
7/17/74	Gulkana (W. Fork to M. Fork)	18		18			
7/17/74	M. Fork (Unspecified)	22		22			
7/17/74	M. Fork (Hungry Hollow)	2		2			
8/10/74	Gulkana (Unspecified)	1,287		1,287			
8/10/74	Gulkana (W. Fork to M. Fork)	1		1			
8/14/74	M. Fork (Unspecified)	15		15			

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Table 15.-Page 2 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/23/75	Gulkana (W. Fork to M. Fork)	39		39			4
7/23/75	M. Fork (Swede to Dickey)	21		21			
8/4/75	W. Fork (Keg Cr. Mouth)	1		1			
8/4/75	M. Fork (Unspecified)	77		77			
8/4/75	E. Fork (Mouth to Paxson)	22		22			
8/5/75	Gulkana (Mouth to W. Fork)	22		22			
8/5/75	Gulkana (W. Fork to M. Fork)	605		605			
8/22/75	Gulkana (Unspecified)	100		100			
7/8/76	Gulkana (W. Fork to M. Fork)	8		8			
7/9/76	Gulkana (Mouth to W. Fork)	146		146			
7/9/76	Gulkana (W. Fork to M. Fork)	66		66			
7/13/76	Gulkana (Mouth to W. Fork)	40		40			
7/20/76	W. Fork (Keg Cr. Mouth)	5		5			
7/20/76	West Fork (Moose Cr.)	4		4			
7/20/76	Gulkana (W. Fork to M. Fork)	186		186			
7/20/76	M. Fork (Unspecified)	29		29			
7/20/76	M.Fork (Mouth to Swede)	40		40			
7/20/76	M. Fork (Hungry Hollow)	4		4			
7/25/76	Gulkana (Mouth to W. Fork)	504		504	1	2	2
7/25/76	Gulkana (W. Fork to M. Fork)	323		323			
7/29/76	Gulkana (Mouth to W. Fork)	684		684			
7/29/76	Gulkana (W. Fork to M. Fork)	305		305			
7/29/76	E. Fork (Mouth to Paxson)	5		5			
8/10/76	M. Fork (Unspecified)	9		9			
8/10/76	E. Fork (Mouth to Paxson)	45		45			
7/24/77	W. Fork (Keg Cr. Mouth)	13		13			
7/24/77	West Fork (Moose Cr.)	2		2			
7/24/77	M. Fork (Unspecified)	129		129			
7/24/77	M. Fork (Hungry Hollow)	11		11			
7/24/77	E. Fork (Mouth to Paxson)	45		45			
7/29/77	Gulkana (Mouth to W. Fork)	321		321			
7/29/77	Gulkana (W. Fork to M. Fork)	529		529			
7/17/78	M. Fork (Unspecified)	5		5			
7/28/78	M. Fork (Unspecified)	15		15			
7/28/78	E. Fork (Mouth to Paxson)	45		45			
7/28/78	Gulkana confluence (Unspecified)	90		90			
7/30/78	Gulkana (Mouth to W. Fork)	201		201	1	1	1
7/30/78	Gulkana (W. Fork to M. Fork)	430		430	1	1	1

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Table 15.-Page 3 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/31/78	W. Fork (Unspecified)	11		11			
7/31/78	W. Fork (Keg Cr.)	10		10			
7/31/78	M. Fork (Unspecified)	13		13			
7/31/78	M. Fork (Hungry Hollow)	10		10			
7/31/78	Gulkana confluence (Unspecified)	10		10			
7/31/78	Gulkana confluence (Unspecified)	318		318			
7/31/78	E. Fork (Mouth to Paxson)	36		36			
7/31/78	M. Fork (Swede Cr.)	65		65			
8/23/78	W. Fork (Unspecified)	1		1			
7/4/79	Gulkana (Mouth to W. Fork)	927		927			
7/4/79	Gulkana (W. Fork to M. Fork)	125		125			
7/19/79	W. Fork (Unspecified)	6		6			
7/19/79	W. Fork (Keg Cr.)	10		10			
7/19/79	M. Fork (Unspecified)	244		244			
7/19/79	M. Fork (Hungry Hollow)	48		48			
7/19/79	E. Fork (Mouth to Paxson)	12		12			
8/13/79	M. Fork (Swede to Dickey)	4		4			
8/13/79	M. Fork (Hungry Hollow)	2		2			
8/13/79	E. Fork (Mouth to Paxson)	35		35			
8/13/79	M. Fork (Hungry Hollow to	2		2			
7/21/80	W. Fork (Unspecified)	26		26			
7/21/80	W. Fork (Keg Cr.)	2		2			
7/21/80	M. Fork (Hungry Hollow)	55		55			
7/21/80	E. Fork (Mouth to Paxson)	35		35			
7/21/80	M. Fork confluence (Unspecified)	195		195			
7/21/80	M. Fork confluence (Unspecified)	30		30			
7/21/80	M. Fork (Mouth to Swede)	57		57			
7/21/80	M. Fork (Hungry Hollow to	40		40			
7/22/80	M. Fork (Unspecified)	175		175			
7/22/80	Gulkana (Above W. Fork)	265		265			
7/22/80	E. Fork (Mouth to Paxson)	24		24			
8/11/80	M. Fork (Unspecified)	5		5			
7/18/81	West Fork (Moose Cr.)	4		4			
7/18/81	M. Fork (Unspecified)	30		30			
7/20/81	M. Fork (Unspecified)	51		51			
7/20/81	M. Fork (Hungry Hollow)	22		22			
7/7/82	Gulkana (Mouth to Bridge)	350		350			
7/19/82	W. Fork (Unspecified)	7		7			

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Table 15.-Page 4 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/19/82	M. Fork (Unspecified)	56		56			
8/6/82	M. Fork (Unspecified)	49		49			
8/6/82	M. Fork confluence (Unspecified)	205		205			
8/16/82	Gulkana (Unspecified)	1,050	519	1,569			
7/8/83	Gulkana (Unspecified)	592	10	602			
7/20/83	W. Fork (Unspecified)	21		21			
7/20/83	West Fork (Moose Cr.)	8		8			
7/20/83	M. Fork (Swede to Dickey)	45		45			
7/20/83	M.Fork (Mouth to Swede)	23		23			
7/20/83	M. Fork (Hungry Hollow)	66		66			
7/20/83	E. Fork (Mouth to Paxson)	19		19			
7/20/83	Gulkana confluence (Unspecified)	95		95			
7/22/83	Gulkana confluence (Unspecified)	280		280			
7/22/83	M. Fork (Mouth to Dickey)	195		195			
8/11/83	M.Fork (Mouth to Swede)	14		14			
8/11/83	Gulkana confluence (Unspecified)	320		320			
8/11/83	E. Fork (Mouth to Paxson)	55		55			
8/11/83	M. Fork (Mouth to Swede)	12		12			
7/6/84	W. Fork (Unspecified)	13		13	3	2	3
7/6/84	Gulkana (W. Fork to M. Fork)	15		15	3	2	2
7/6/84	M. Fork (Unspecified)	54		54	3	2	3
7/16/84	W. Fork (Unspecified)	105		105	3	2	3
7/20/84	West Fork (Moose Cr.)	17		17	1	3	2
7/20/84	M. Fork (Mouth to Swede)	4	2	6	2	1	2
7/23/84	W. Fork (Keg Cr. Mouth)	65	10	75	3	2	2
7/23/84	W. Fork (Unspecified)	34	5	39	2	2	2
7/23/84	Gulkana (W. Fork to M. Fork)	285	12	297	1	1	1
7/23/84	M. Fork (Unspecified)	168		168	2	1	1
7/23/84	M. Fork (Hungry Hollow)	63		63	1	1	1
7/23/84	E. Fork (Mouth to Paxson)	38		38	1	1	1
7/24/84	Gulkana (W. Fork to M. Fork)	935		935	3	2	2
7/24/84	E. Fork (Mouth to Paxson)	51		51	2	2	2
8/3/84	Gulkana (W. Fork to M. Fork)	1,295	195	1,490	2	1	1
8/3/84	M. Fork (Unspecified)	15	10	25	2	2	2
8/3/84	E. Fork (Mouth to Paxson)	73	9	82	1	1	1
7/15/85	W. Fork (Unspecified)	8		8	1	3	2
7/15/85	Gulkana (W. Fork to M. Fork)	25		25	1	3	
7/15/85	M. Fork (Unspecified)	36		36	1	2	1

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Table 15.-Page 5 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/19/85	W. Fork (Unspecified)	30		30	1	1	1
7/19/85	M. Fork (Unspecified)	65		65	2	2	2
7/19/85	M. Fork (Hungry Hollow)	32		32	1	1	1
7/19/85	E. Fork (Mouth to Paxson)	11		11	1	1	1
7/22/85	Gulkana (W. Fork to M. Fork)	24		24	2	3	3
7/22/85	E. Fork (Mouth to Paxson)	14		14	1	2	2
7/26/85	Gulkana (W. Fork to M. Fork)	75		75	1	1	1
7/26/85	M. Fork (Unspecified)	101		101	1	1	1
7/26/85	M. Fork (Hungry Hollow)	31		31	1	1	1
7/26/85	E. Fork (Mouth to Paxson)	17		17	1	1	1
8/15/85	Gulkana (W. Fork to M. Fork)	29	11	40	3	3	3
8/15/85	M. Fork (Unspecified)	12		12	3	2	3
8/15/85	M. Fork (Hungry Hollow)	1		1	3	1	3
8/17/85	Gulkana (W. Fork to M. Fork)	118	21	139	2	2	2
8/17/85	E. Fork (Mouth to Paxson)	15	4	19	2	1	2
7/11/86	Gulkana (Mouth to W. Fork)	235	9	244	2	3	3
7/11/86	Gulkana (W. Fork to M. Fork)	903	12	915	2	2	2
7/21/86	Gulkana (Unspecified)	330	3	333	1	2	1
7/21/86	M. Fork (Swede to Dickey)	133		133	1	1	1
7/21/86	M.Fork (Mouth to Swede)	155		155	2	1	2
7/21/86	M. Fork (Hungry Hollow)	69		69	2	1	1
7/21/86	E. Fork (Mouth to Paxson)	23		23	2	2	2
7/28/86	Gulkana (W. Fork to M. Fork)	1,186	11	1,197			
7/28/86	M. Fork (Swede to Dickey)	95	6	101	1	1	1
7/28/86	M.Fork (Mouth to Swede)	101	4	105	1	1	1
7/28/86	E. Fork (Mouth to Paxson)	80	1	81	1	1	1
8/11/86	Gulkana (Mouth to Sourdough)	406	40	446	3	2	2
8/11/86	Gulkana (Sourdough to W.Fork)	925	100	1,025	2	1	1
8/11/86	Gulkana (W. Fork to M. Fork)	870	220	1,090	2		
8/11/86	M. Fork (Mouth to Swede)	21	14	35	2	1	1
8/11/86	Gulkana (Mouth to M. Fork)	33	22	55	3	1	1
8/11/86	E. Fork (Mouth to Paxson)	96	21	117	3	1	1
7/20/87	W. Fork (Unspecified)	55		55	1	1	1
7/20/87	West Fork (Moose Cr.)	13		13	1	3	2
7/20/87	Gulkana (W. Fork to M. Fork)	500		500	1	2	1
7/20/87	M. Fork (Swede to Dickey)	27	1	28	1	1	1
7/20/87	M. Fork (Mouth to Hungry)	42		42	1	1	1
7/20/87	M. Fork (Hungry Hollow)	61	1	62	2	1	1

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Table 15.-Page 6 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/20/87	E. Fork (Mouth to Paxson)	11		11	1	1	1
7/28/87	Gulkana (W. Fork to M. Fork)	855	28	883	1	1	1
7/28/87	M. Fork (Swede to Dickey)	98	8	106	1	1	1
7/28/87	M. Fork (Swede Lake)	112	1	113	1	2	2
7/28/87	M.Fork (Mouth to Swede)	47		47	1	1	1
7/28/87	E. Fork (Mouth to Paxson)	62		62	1	1	1
7/12/88	Gulkana (W. Fork to M. Fork)	90		90	2	1	2
7/12/88	M. Fork (Swede to Dickey)	95		95	3	2	2
7/12/88	M. Fork (Hungry Hollow to	80		80	3	2	2
7/20/88	W. Fork (Unspecified)	170	7	177	3	1	2
7/20/88	W. Fork (Keg Cr.)	14		14	3	1	2
7/20/88	M. Fork (Unspecified)	370	10	380	2	2	2
7/20/88	M. Fork (Swede to Dickey)	64	4	68	2	1	1
7/20/88	M.Fork (Mouth to Swede)	88	2	90	2	2	2
7/20/88	M. Fork (Hungry Hollow)	73	11	84	2	1	1
7/20/88	E. Fork (Mouth to Paxson)	18		18	2	1	1
7/28/88	Gulkana (W. Fork to M. Fork)	405	15	420	3	2	3
7/28/88	E. Fork (Mouth to Paxson)	85	2	87	3	2	2
8/9/88	Gulkana (Mouth to Sourdough)	100	110	210	2	3	3
8/9/88	Gulkana (W. Fork to M. Fork)	450	260	710	3	2	2
8/9/88	E. Fork (Mouth to Paxson)	15	27	42	3	2	2
6/30/89	Gulkana (Mouth to W. Fork)	30		30	2	2	3
6/30/89	Gulkana (W. Fork to M. Fork)	40		40	1	2	2
7/6/89	Gulkana (Mouth to W. Fork)	45		45	1	2	2
7/6/89	Gulkana (W. Fork to M. Fork)	980		980	1	1	1
7/13/89	Gulkana (Mouth to W. Fork)	97	8	105	2	3	2
7/13/89	Gulkana (W. Fork to M. Fork)	730		730	2	1	2
7/13/89	E. Fork (Mouth to Paxson)	55		55	2	1	1
7/18/89	W. Fork (above Moose Cr.)	105		105	1	1	1
7/18/89	W. Fork (Keg to Moose Cr.)	95		95	1	1	1
7/18/89	Gulkana (W. Fork to M. Fork)	365		365	1	1	1
7/18/89	M. Fork (Swede to Dickey)	115		115	1	1	1
7/18/89	M.Fork (Mouth to Swede)	134		134	1	1	1
7/18/89	M. Fork (Hungry Hollow)	44		44	1	1	1
7/18/89	E. Fork (Mouth to Paxson)	25		25	1	1	1
7/18/89	E. Fork (Mouth to Paxson)	25		25	1	1	1
7/22/89	Gulkana (Mouth to W. Fork)	140	2	142	2	1	2
7/26/89	Gulkana (Bear Cr.)	2		2	1	1	1

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Table 15.-Page 7 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/26/89	E. Fork (Mouth to Paxson)	590	123	713	2	1	1
7/27/89	W. Fork (Mouth to Moose Cr.)	97	16	113	2	2	2
7/27/89	West Fork (Moose Cr.)	29	3	32	2	2	2
7/27/89	W. Fork (Keg to Moose Cr.)	359	7	366	2	1	2
7/27/89	W. Fork (Keg Cr.)	15		15	2	2	2
7/27/89	M. Fork (Swede to Dickey)	44	7	51	2	2	2
7/27/89	M.Fork (Mouth to Swede)	162	16	178	2	1	1
7/27/89	M. Fork (Hungry Hollow)	29	1	30	2	1	1
7/27/89	E. Fork (Mouth to Paxson)	89	1	90	3	1	2
7/28/89	Gulkana (Mouth to W. Fork)	472	6	478	1	1	1
7/28/89	Gulkana (W. Fork to M. Fork)	1,111	23	1,134	1	1	1
7/30/89	Gulkana (Mouth to W. Fork)	163	1	164	3	2	3
8/3/89	Gulkana (Mouth to W. Fork)	108	14	122	3	2	3
8/3/89	Gulkana (W. Fork to M. Fork)	138	30	168	3	2	3
8/3/89	M.Fork (Mouth to Swede)	68	29	97	2	2	2
8/3/89	E. Fork (Mouth to Paxson)	21	15	36	3	2	3
8/21/89	Gulkana (Mouth to W. Fork)	45		45	1	1	1
8/21/89	Gulkana (W. Fork to M. Fork)	35		35	1	1	1
6/26/90	Gulkana (Mouth to W. Fork)	3		3	2	2	2
6/26/90	Gulkana (W. Fork to M. Fork)	25		25	2	1	1
6/28/90	Gulkana (Mouth to Bridge)	35		35	2	2	2
6/29/90	Gulkana (Unspecified)	305		305	1	3	3
6/29/90	Gulkana (W. Fork to M. Fork)	65		65	1	2	2
7/3/90	Gulkana (Unspecified)	479		479	1	2	2
7/3/90	Gulkana (W. Fork to M. Fork)	37		37	1	2	2
7/6/90	Gulkana (Unspecified)	680		680	1	2	1
7/6/90	Gulkana (W. Fork to M. Fork)	156		156	1	2	1
7/11/90	Gulkana (Unspecified)	590	1	591	4	1	4
7/16/90	Gulkana (Unspecified)	1,125		1,125	1	1	1
7/16/90	W. Fork (Unspecified)	186		186	2	1	2
7/16/90	Gulkana (W. Fork to M. Fork)	280		280	2	1	2
7/16/90	M. Fork (Swede to Dickey)	10		10	1	1	1
7/16/90	M.Fork (Mouth to Swede)	95		95	2	1	2
7/20/90	Gulkana (Mouth to W. Fork)	165	98	263	1	1	1
7/20/90	Gulkana (W. Fork to M. Fork)	250		250	1	1	1
7/20/90	E. Fork (Mouth to Paxson)	17		17	1	1	1
7/26/90	W. Fork (Mouth to Moose Cr.)	5		5	3	2	3
7/26/90	W. Fork (Keg Cr.)	2		2	3	2	2

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Table 15.-Page 8 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/26/90	M. Fork (Swede to Dickey)	40		40	3	3	3
7/26/90	M.Fork (Mouth to Swede)	39	14	53	3	2	3
7/26/90	M.Fork (Mouth to Swede)	39	14	53	3	2	3
7/26/90	M. Fork (Hungry Hollow)	9	2	11	3	2	2
7/26/90	E. Fork (Mouth to Paxson)	21		21	3	2	3
8/1/90	Gulkana (Mouth to W. Fork)	1,215		1,215	1	1	1
8/1/90	Gulkana (W. Fork to M. Fork)	970		970	1	1	1
8/1/90	E. Fork (Mouth to Paxson)	95		95	1	1	1
8/3/90	M. Fork (Swede to Dickey)	29		29	1	2	
8/3/90	M.Fork (Mouth to Swede)	57	20	77	1	2	2
8/14/90	Gulkana (W. Fork to M. Fork)	121	35	156	1	1	1
8/14/90	Gulkana (Mouth to W. Fork)	503	43	546	1	1	1
7/15/91	W. Fork (above Moose Cr.)	30		30	2	3	2
7/15/91	West Fork (Moose Cr.)	5		5	2	2	2
7/15/91	W. Fork (Keg to Moose Cr.)	24		24	2	3	3
7/15/91	W. Fork (Keg Cr.)	1		1	2	2	2
7/15/91	Gulkana (W. Fork to M. Fork)	505		505	2	2	2
7/15/91	M. Fork (Swede to Dickey)	76		76	2	3	2
7/15/91	M.Fork (Mouth to Swede)	105		105	2	3	3
7/22/91	W. Fork (Mouth to Moose Cr.)	39	1	40	3	3	3
7/22/91	West Fork (Moose Cr.)	10		10	3	3	3
7/22/91	W. Fork (Keg to Moose Cr.)	28		28	2	3	3
7/22/91	M. Fork (Swede to Dickey)	128	3	131	2	3	2
7/22/91	M.Fork (Mouth to Swede)	80	1	81	3	2	3
7/22/91	M. Fork (Hungry Hollow)	44		44	2	1	2
7/22/91	E. Fork (Mouth to Paxson)	29		29	3	2	3
8/6/91	Gulkana (Mouth to W. Fork)	390	60	450	3	3	3
8/6/91	Gulkana (W. Fork to M. Fork)	870	221	1,091	3	2	3
8/6/91	E. Fork (Mouth to Paxson)	104	28	132	3	1	3
8/12/91	Gulkana (Unspecified)	202	351	553	2	3	4
7/23/92	W. Fork (above Moose Cr.)	19	1	20	3	2	2
7/23/92	Gulkana (W. Fork to M. Fork)	435	9	444	3	2	3
7/23/92	M. Fork (Swede to Dickey)	25	2	27	3	2	3
7/23/92	M.Fork (Mouth to Swede)	20		20	3	2	2
7/23/92	M. Fork (Hungry Hollow)	12		12	3	1	
7/23/92	E. Fork (Mouth to Paxson)	10		10	3	2	3
7/29/92	W. Fork (Mouth to Moose Cr.)	10	1	11	2	3	
7/29/92	West Fork (Moose Cr.)	14		14	2	3	3

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Table 15.-Page 9 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/29/92	Gulkana (W. Fork to M. Fork)	152	8	160	2	3	3
7/29/92	M. Fork (Swede to Dickey)	30	2	32	2	2	2
7/29/92	M.Fork (Mouth to Swede)	56	1	57	2	2	2
7/29/92	M. Fork (Hungry Hollow)	6		6	2	2	2
7/29/92	E. Fork (Mouth to Paxson)	77		77	2	2	2
8/6/92	Gulkana (W. Fork to M. Fork)	29	35	64	4	4	
8/6/92	M. Fork (Swede to Dickey)	4		4	4	4	
8/6/92	M.Fork (Mouth to Swede)	6		6	4	4	
8/6/92	E. Fork (Mouth to Paxson)	20		20	4	4	
8/10/92	Gulkana (W. Fork to M. Fork)	123	199	322	3	2	3
8/10/92	M. Fork (Swede to Dickey)	4		4	3	2	3
8/10/92	M.Fork (Mouth to Swede)	2	7	9	3	2	2
8/10/92	E. Fork (Mouth to Paxson)	22	27	49	3	2	2
6/28/93	Gulkana (W. Fork to M. Fork)	205		205			
6/28/93	E. Fork (Mouth to Paxson)	110		110			
7/27/93	Gulkana (Unspecified)	1,074	6	1,080			
7/27/93	Gulkana (W. Fork to M. Fork)	590		590	1	2	
7/27/93	E. Fork (Mouth to Paxson)	16		16			
7/23/94	Gulkana (Unspecified)	1,607	19	1,626	2	2	2
7/23/94	Gulkana (W. Fork to M. Fork)	50	6	56	1	2	2
8/15/94	Gulkana (Unspecified)	450	81	531	1	1	1
8/16/94	Gulkana (Sourdough to W.Fork)	90	25	115			
8/16/94	E. Fork (Mouth to Paxson)	150	133	283			
8/17/95	Gulkana (Mouth to W. Fork)	110	325	435			
8/17/95	W. Fork (Keg Cr.)		3	3			
8/17/95	W. Fork (Keg Cr.)	25	3	28			
8/17/95	Gulkana (W. Fork to M. Fork)	110	86	196			
8/17/95	M. Fork (Unspecified)	15	17	32			
8/17/95	W. Fork (Victor Cr.)	18	8	26			
8/22/95	Gulkana (W. Fork to M. Fork)	250	40	290	3	3	3
8/22/95	Gulkana (W. Fork to M. Fork)	250	40	290			
6/23/96	Gulkana (Mouth to W. Fork)	1,480	12	1,492			
6/23/96	Gulkana (W. Fork to M. Fork)	25		25			
7/18/96	Gulkana (Mouth to W. Fork)	2,194	1	2,195			
7/18/96	Gulkana (W. Fork to M. Fork)	1,970	3	1,973			
7/18/96	M. Fork (Swede to Dickey)	160		160			
7/18/96	M.Fork (Mouth to Swede)	40		40			
7/20/96	Gulkana (Mouth to W. Fork)	2,439	8	2,447			

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Table 15.-Page 10 of 10.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/20/96	Gulkana (W. Fork to M. Fork)	1,800	4	1,804			
7/20/96	M. Fork (Swede to Dickey)	180		180			
7/20/96	M.Fork (Mouth to Swede)	63		63			
8/8/96	Gulkana (Mouth to W. Fork)	886	19	905			
8/8/96	Gulkana (W. Fork to M. Fork)	890	70	960			
8/8/96	M. Fork (Swede to Dickey)	43	10	53			
8/8/96	M.Fork (Mouth to Swede)	130	10	140			
7/19/97	Gulkana (Mouth to Bridge)	50	0	50			
7/19/97	Gulkana (Bridge to W. Fork)	1,472	0	1,472			
7/19/97	Gulkana (W. Fork to M. Fork)	1,980	0	1,980			
7/20/97	W. Fork (Unspecified)	262	20	282			
7/27/98	Gulkana (Bridge to W. Fork)	570	5	575	1	2	1
7/20/98	M. Fork (Swede to Dickey)	66		66			
7/20/98	E. Fork (Mouth to Paxson)	310	0	310			
7/27/98	Gulkana (W. Fork to M. Fork)	790	10	800	2	2	3
7/18/98	W. Fork (Keg to Moose Cr.)	4		4			
7/27/98	M. Fork (Unspecified)	120	11	131	1	2	2
7/18/98	W. Fork (Moose to Monsoon)	59		59			
7/27/98	Gulkana (Mouth to Bridge)	80	2	82			
7/27/98	E. Fork (Mouth to Paxson)	30	1	31	2	2	2
7/20/98	M. Fork (Hungry Hollow to	63		63			
7/20/98	Gulkana (W. Fork to M. Fork)	840		840			

^a Unpublished data.

^b Survey conditions were judged on a five point scale where one is good and five is poor.

Table 16.-Upper Copper River drainage historic aerial survey counts^a for chinook salmon.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/18/74	Ahtell Cr.	6		6			
8/5/75	Ahtell Cr.	4		4			
7/8/76	Ahtell Cr.	2		2			
7/19/79	Ahtell Cr.	8		8			
7/22/83	Ahtell Cr.	6		6			
7/23/84	Ahtell Cr.	2		2	2	1	1
7/22/85	Ahtell Cr.	8		8	1	1	1
7/21/87	Ahtell Cr.	8		8	2	1	1
7/20/90	Ahtell Cr.	2		2	1	1	1
7/23/91	Ahtell Cr.	5		5	1	1	1
6/23/96	Ahtell Cr.	15		15			
7/19/98	Ahtell Cr.	33		33			
7/30/71	Bone Cr.	1		1			1
7/19/76	Bone Cr.	4		4			
7/19/82	Bone Cr.	100		100			
7/22/83	Bone Cr.	19		19			
7/20/84	Bone Cr.	25	15	40	1	1	1
7/22/85	Bone Cr.	10		10	1	1	1
7/26/85	Bone Cr.	10		10	1	1	1
7/21/87	Bone Cr.	20		20	2	2	2
7/20/88	Bone Cr.	5		5	2	2	2
7/18/89	Bone Cr.	28		28	1	1	1
7/20/90	Bone Cr.	30		30	1	1	1
7/26/90	Bone Cr.	15		15	2	1	1
7/1/92	Bone Cr.	7	1	8	3	3	
7/24/84	Boulder Cr.	7	1	8	2	3	2
7/24/84	Boulder Cr.		2	2	2	1	1

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Table 16.-Page 2 of 6.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/22/85	Boulder Cr.	2		2	1	2	2
7/26/89	Boulder Cr.	19		19	1	1	1
7/24/77	Drop Cr.	2		2			
7/24/87	Drop Cr.	22		22			
7/24/87	Drop Cr.	13	4	17	2	1	1
7/24/87	Drop Cr.	5		5	2	1	1
7/26/89	Drop Cr.	3		3	2	1	1
7/20/90	Drop Cr.	19		19	1	2	2
7/24/92	Drop Cr.	1		1	3	3	3
7/11/69	E. Fork Chistochina R.	200		200			
7/14/69	E. Fork Chistochina R.			0			
7/21/70	E. Fork Chistochina R.	368		368			
7/21/71	E. Fork Chistochina R.	512		512			1
7/26/72	E. Fork Chistochina R.	294		294			3
7/30/72	E. Fork Chistochina R.	348		348			2
7/24/73	E. Fork Chistochina R.	476		476			
7/18/74	E. Fork Chistochina R.	137		137			
8/5/75	E. Fork Chistochina R.	71		71			
7/8/76	E. Fork Chistochina R.	235		235			
7/19/76	E. Fork Chistochina R.	289		289			
7/30/77	E. Fork Chistochina R.	132		132			
7/28/78	E. Fork Chistochina R.	120		120			
7/31/78	E. Fork Chistochina R.	137		137			
7/19/79	E. Fork Chistochina R.	810		810			
7/21/80	E. Fork Chistochina R.	575		575			
7/20/81	E. Fork Chistochina R.	120		120			

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Table 16.-Page 3 of 6.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/19/82	E. Fork Chistochina R.	1,260		1,260			
7/20/83	E. Fork Chistochina R.	575		575			
7/22/83	E. Fork Chistochina R.	545		545			
7/20/84	E. Fork Chistochina R.	287	5	292	2	1	2
7/23/84	E. Fork Chistochina R.	565	12	577	2	2	
7/22/85	E. Fork Chistochina R.	316		316	1	1	1
7/21/86	E. Fork Chistochina R.	615	3	618	2	3	3
7/21/87	E. Fork Chistochina R.	758	6	764	2	1	1
7/20/88	E. Fork Chistochina R.	684	25	709	3	2	2
7/18/89	E. Fork Chistochina R.	740	10	750	2	1	1
7/20/90	E. Fork Chistochina R.	615	30	645	2	1	1
7/26/90	E. Fork Chistochina R.	179		179	3	1	2
7/28/91	E. Fork Chistochina R.	865	60	925	2	1	2
7/24/92	E. Fork Chistochina R.	87	1	88	3	1	2
7/29/92	E. Fork Chistochina R.	42	1	43	3	1	2
7/22/94	E. Fork Chistochina R.	502	6	508	1	3	2
6/23/96	E. Fork Chistochina R.	2,071		2,071			
8/8/96	E. Fork Chistochina R.	17		17			
7/20/97	E. Fork Chistochina R.	1,950	295	2,245			
7/19/98	E. Fork Chistochina R.	690	50	740			
7/20/98	E. Fork Chistochina R.	1,020	20	1,040	2	1	2
7/24/73	Eagle Cr.	10		10			
7/18/74	Eagle Cr.	1		1			
8/5/75	Eagle Cr.	9		9			
7/30/77	Eagle Cr.	5		5			
7/28/78	Eagle Cr.	10		10			
7/19/79	Eagle Cr.	24		24			

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Table 16.-Page 4 of 6.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/21/80	Eagle Cr.	18		18			
8/11/80	Eagle Cr.	2		2			
7/19/82	Eagle Cr.	8		8			
7/20/83	Eagle Cr.	18		18			
7/22/83	Eagle Cr.	43		43			
7/23/84	Eagle Cr.	50		50	2	1	2
7/22/85	Eagle Cr.	11		11	1	1	1
7/26/85	Eagle Cr.	7		7	1	1	1
7/21/86	Eagle Cr.	21		21	2	2	2
7/21/87	Eagle Cr.	8		8	2	1	1
7/18/89	Eagle Cr.	55		55	2	1	1
7/26/89	Eagle Cr.	80	3	83	2	1	1
7/20/90	Eagle Cr.	18		18	1	1	1
7/26/90	Eagle Cr.	23		23	3	1	1
7/28/91	Eagle Cr.	20		20	2	1	1
7/24/92	Eagle Cr.	74		74	3	1	1
7/29/92	Eagle Cr.	32		32	3	1	1
7/19/98	Eagle Cr.	20		20			
7/24/73	Gakona R.	4		4			
7/5/70	Indian Cr.	59		59			1
6/27/71	Indian Cr.	175		175			
7/4/71	Indian Cr.	5		5			
7/18/74	Indian Cr.	1		1			
8/5/75	Indian Cr.	6		6			
7/8/76	Indian Cr.	61		61			
7/31/78	Indian Cr.	9		9			

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Table 16.-Page 5 of 6.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/19/79	Indian Cr.	29		29			
7/21/80	Indian Cr.	24		24			
7/19/82	Indian Cr.	179		179			
7/22/83	Indian Cr.	41		41			
7/23/84	Indian Cr.	17		17	2	1	1
7/22/85	Indian Cr.	14		14	1	1	1
7/9/87	Indian Cr.	3		3	2	1	2
7/21/87	Indian Cr.	31	1	32	2	1	1
7/26/89	Indian Cr.	3	4	7	1	1	1
6/28/90	Indian Cr.	15		15	2	1	1
7/20/90	Indian Cr.	12		12	1	1	1
7/23/91	Indian Cr.	18		18	2	2	2
7/30/92	Indian Cr.	1		1	3	1	2
7/22/94	Indian Cr.	43	4	47	3	1	3
6/23/96	Indian Cr.	207		207			
7/20/97	Indian Cr.	227	43	270			
8/8/96	Indian Cr.	1		1			
7/19/98	Indian Cr.	48		48			
7/21/87	Natat Cr.	2		2	2	1	1
7/22/94	Natat Cr.	1	1	2	1	3	2
7/24/84	Sinona Cr.		1	1	2	1	2
7/19/98	Sinona Cr.	20	75	95			
6/28/90	Sinona Cr.	1		1	2	1	1
7/31/78	Spring Cr.	74		74			
7/22/83	Spring Cr.	117		117			
7/19/85	Spring Cr.	47		47	1	2	2
7/28/88	Spring Cr.	71	9	80	3	3	3

-continued-

Table 16.-Page 6 of 6.

Date	Stream	Counts of Chinook			Conditions ^b		
		Live	Dead	Total	Sky	Water	Survey
7/27/89	Spring Cr.	109	9	118	3	2	2
8/3/90	Spring Cr.	24	3	27	2	1	1
7/21/87	Spring Cr.	154		154	2	3	2

^a Unpublished data.

^b Survey conditions were judged on a five point scale where one is good and five is poor.

Each area is organized by stream and year surveyed. The Upper Copper River consists of all tributaries upstream of the Gulkana River. The Chitina and Tonsina River drainages include four spawning streams, the Tazlina River drainage has two, the Klutina River drainage has five, and the Upper Copper River has 12. The Gulkana River drainage consists of a number of tributaries and different sections of mainstem river that have been counted in different combinations in past years.

Estimates of escapement other than aerial counts throughout the drainage are limited. Table 17 summarizes the daily and cumulative totals of chinook salmon passing through the Gulkana River weir in 1996.

Age compositions of chinook salmon carcasses sampled from the Gulkana and Klutina rivers are given in Tables 18 and 19. The chinook salmon sampled ranged in age from 4-7, with the majority being age 5 and 6. However, chinook salmon of age 7 were only seen on the Klutina River.

DATA ARCHIVAL

The raw data files used to construct the tables in this report are given in Appendix B. These data are available from the authors as well as from the Alaska Department of Fish and Game, Sport Fish Division, Research and Technical Services, 333 Raspberry Rd., Anchorage, AK, 99518-1599.

DISCUSSION

Summary of data for this report revealed some obvious data gaps and deficiencies. Age composition data from the commercial catch is generally quite good, however there are no known composition estimates for years 1976-1979. Composition data from the personal use and subsistence fisheries suffer from small sample sizes, but have been collected annually since 1992. Composition data from the sport fisheries have been sporadic and also consist of small samples. Generally speaking the age compositions from all the fisheries are similar with the exception that age 2 and age 8 fish are more prevalent in the commercial fishery. Because commercial harvests are substantially larger than harvest in the other fisheries the lack of precision in age composition estimates for the latter fisheries should not add substantial bias to the catch-age analysis. However, a more rigorous sampling program for the personal use, subsistence and sport fisheries would provide more certainty for this analysis.

Numerous aerial survey count data exist for this drainage, but only nine streams have been surveyed on a regular basis in recent years. As an escapement index is required for the catch-age analysis, and because age-specific catch data are only available since 1980, it is likely that the index will include counts from these nine streams.

ACKNOWLEDGMENTS

Tom Taube, Linda Perry-Plake, and John Wilcock provided computer data files and field notes for summary in this report. Peggy Merritt reviewed the report and Sara Case finalized the document for publication. The U.S. Fish and Wildlife Service provided funding.

Table 17.-Daily and cumulative counts of chinook salmon passing through the Gulkana River weir, 1996^a

Date	Daily	Cumulative	Date	Daily	Cumulative
11-Jun	2	2	7-Jul	597	597
12-Jun	21	23	8-Jul	246	843
13-Jun	141	164	9-Jul	140	140
14-Jun	40	204	10-Jul	82	222
15-Jun	116	320	11-Jul	87	309
16-Jun	203	523	12-Jul	131	440
17-Jun	849	1,372	13-Jul	71	511
18-Jun	815	2,187	14-Jul	55	566
19-Jun	489	2,676	15-Jul	83	649
20-Jun	203	2,879	16-Jul	203	852
21-Jun	463	3,342	17-Jul	315	1,167
22-Jun	346	3,688	18-Jul	334	1,501
23-Jun	636	4,324	19-Jul	205	1,706
24-Jun	802	5,126	20-Jul	196	1,902
25-Jun	195	5,321	21-Jul	57	1,959
26-Jun	75	5,396	22-Jul	15	1,974
27-Jun	71	5,467	23-Jul	66	2,040
28-Jun	59	5,526	24-Jul	54	2,094
29-Jun	48	5,574	25-Jul	54	2,148
30-Jun	376	5,950	26-Jul	25	2,173
1-Jul	114	6,064	27-Jul	37	2,210
2-Jul	1,429	7,493	28-Jul	20	2,230
3-Jul	521	8,014	29-Jul	57	2,287
4-Jul	92	8,106	30-Jul	92	2,379
5-Jul	146	8,252	31-Jul	160	2,539
6-Jul	50	8,302			

^a Data from LaFlamme 1997.

Table 18.-Age composition of chinook salmon sampled from the Gulkana River escapement, 1988-1989.

Females		Age 4	Age 5		Age 6		Age 7	Total
Year	Sample Dates	1.2	1.3	2.2	1.4	2.3	2.4	
1988 ^a	6 Aug-11 Aug	7	78		12	2		99
1989 ^b	16 June-31 July	1	34		40	1		76
Males								
1988 ^a	6 Aug-11 Aug	6	73		4	3		86
1989 ^b	16 June-31 July	1	23		37	1		62
Total								
1988 ^a	6 Aug-11 Aug	13	151		16	5		185
1989 ^b	16 June-31 July	2	57		77	2		138

^a Unpublished data.

^b Data from Potterville and Webster 1990.

Table 19.-Age composition of chinook salmon sampled from the Klutina River escapement, 1988.

Females		Age 4	Age 5		Age 6		Age 7	Total
Year	Sample Dates	1.2	1.3	2.2	1.4	2.3	2.4	
1988 ^a	7 July-21 Aug	2	11	1	15	5	8	42
Males								
1988 ^a	7 July-21 Aug	3	19	1	6	7	4	40
Total								
1988 ^a	7 July-21 Aug	5	30	2	21	12	12	82

^a Unpublished data.

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APPENDIX A

Appendix A1.-Harvest of chinook salmon by day from the personal use fishery, 1988.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned	
June	1	0	8	July	9	44	144	
	2	1	16		10	27	90	
	3	94	215		11	14	66	
	4	251	438		12	21	67	
	5	294	248		13	15	46	
	6	1	21		14	20	60	
	7	0	13		15	23	85	
	8	4	14		16	21	103	
	9	6	40		17	14	53	
	10	95	341		18	7	32	
	11	167	443		19	2	20	
	12	108	137		20	2	31	
	13	0	16		21	3	21	
	14	1	12		22	4	32	
	15	28	40		23	15	76	
	16	31	57		24	19	42	
	17	97	179		25	7	20	
	18	281	282		26	1	15	
	19	143	116		27	3	13	
	20	1	22		28	2	22	
	21	2	22		29	9	44	
	22	35	41		30	6	66	
	23	65	88		31	0	31	
	24	106	149		August	1	2	22
	25	150	273			2	5	12
	26	83	119			3	6	28
	27	12	35			4	7	43
	28	0	0			5	2	49
	29	31	49			6	1	50
	30	45	81			7	1	35
June	1	43	101	8		0	22	
	2	44	191	9		0	19	
	3	48	149	10		1	32	
	4	21	86	11	0	23		
	5	12	33	12	0	25		
	6	7	37	13	2	39		
	7	11	33	14	0	32		
	8	17	63	15	0	15		

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Appendix A1.-Page 2 of 2.

Month	Day	Number of Chinook	Permits Returned
August	16	0	11
	17	0	19
	18	0	14
	19	0	23
	20	1	31
	21	0	10
	22	1	11
	23	6	14
	24	1	12
	25	1	13
	26	3	6
	27	0	12
	28	1	10
	29	0	9
	30	0	6
	31	0	3

Appendix A2.- Harvest of chinook salmon by day from the personal use fishery, 1989.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned	
June	1	0	172	July	9	48	83	
	2	59	124		10	6	33	
	3	164	297		11	4	49	
	4	103	192		12	3	39	
	5	3	21		13	3	30	
	6	5	10		14	16	56	
	7	0	9		15	39	101	
	8	13	35		16	48	60	
	9	85	210		17	15	31	
	10	262	457		18	7	45	
	11	169	293		19	2	34	
	12	3	16		20	21	83	
	13	19	50		21	6	38	
	14	18	64		22	28	91	
	15	43	105		23	5	51	
	16	84	226		24	3	37	
	17	92	303		25	13	55	
	18	77	239		26	2	40	
	19	9	42		27	10	35	
	20	30	110		28	4	48	
	21	22	61		29	7	93	
	22	38	79		30	3	71	
	23	56	199		31	2	31	
	24	69	273		August	1	0	28
	25	16	79			2	2	22
	26	7	40			3	5	22
	27	23	46			4	0	43
	28	33	91			5	4	71
	29	22	59			6	1	36
	30	45	102			7	1	18
July	1	43	148	8		0	26	
	2	39	104	9	0	16		
	3	34	94	10	0	36		
	4	18	74	11	3	36		
	5	15	38	12	2	77		
	6	26	63	13	0	37		
	7	24	74	14	0	18		
	8	41	106	15	0	25		

-continued-

Appendix A2.-Page 2 of 2.

Month	Day	Number of Chinook	Permits Returned
August	16	0	18
	17	6	20
	18	0	33
	19	0	36
	20	0	22
	21	0	17
	22	1	26
	23	0	15
	24	0	17
	25	2	25
	26	0	29
	27	0	20
	28	0	12
	29	3	13
	30	0	12
	31	0	11

Appendix A3.-Harvest of chinook salmon by day from the personal use fishery, 1990.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
June	1	80	307	July	9	9	31
	2	115	348		10	14	52
	3	55	177		11	15	50
	4	0	21		12	26	93
	5	0	0		13	50	102
	6	4	22		14	38	125
	7	28	70		15	9	94
	8	102	235		16	13	46
	9	217	456		17	11	38
	10	103	179		18	5	59
	11	6	26		19	7	77
	12	25	66		20	9	81
	13	37	83		21	7	85
	14	56	108		22	6	138
	15	98	228		23	4	68
	16	315	387		24	5	14
	17	118	182		25	5	34
	18	20	39		26	2	28
	19	33	58		27	3	61
	20	34	109		28	9	91
	21	65	125		29	13	114
	22	59	130		30	8	38
	23	195	368		31	3	29
24	42	131	August	1	3	51	
25	20	61		2	0	29	
26	17	58		3	6	59	
27	37	85		4	11	123	
28	36	75		5	2	75	
29	36	133		6	4	33	
30	110	392		7	7	58	
July	1	32		87	8	1	56
	2	15	58	9	1	35	
	3	21	68	10	0	68	
	4	27	100	11	4	87	
	5	7	57	12	5	73	
	6	42	137	13	0	14	
	7	58	296	14	0	7	
	8	14	44	15	1	18	

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Appendix A3.-Page 2 of 2.

Month	Day	Number of Chinook	Permits Returned
August	16	0	38
	17	1	13
	18	0	28
	19	0	13
	20	2	23
	21	1	14
	22	0	14
	23	0	19
	24	0	27
	25	0	47
	26	1	20
	27	0	13
	28	0	14
	29	0	18
	30	0	27
	31	0	30

Appendix A4.-Harvest of chinook salmon by day from the personal use fishery, 1991.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
June	1	124	496	July	9	41	77
	2	92	101		10	58	131
	3	0	14		11	39	96
	4	0	16		12	83	178
	5	2	22		13	75	255
	6	48	47		14	51	223
	7	143	160		15	38	131
	8	483	412		16	12	90
	9	153	118		17	21	79
	10	0	30		18	13	116
	11	16	66		19	16	149
	12	55	108		20	43	415
	13	99	165		21	15	146
	14	181	308		22	6	81
	15	380	719		23	13	63
	16	117	229		24	12	61
	17	27	70		25	4	84
	18	42	109		26	4	104
	19	26	79		27	15	205
	20	88	151		28	11	147
	21	141	237		29	0	18
	22	152	385		30	0	17
	23	21	111		31	0	13
	24	7	26		August	1	0
25	19	45	2	1		59	
26	77	91	3	6		133	
27	39	77	4	0		39	
28	64	119	5	1		14	
29	149	174	6	0		11	
30	91	113	8	1		20	
July	1	33	74	9		1	54
	2	40	60	10	3	102	
	3	38	66	11	1	47	
	4	80	128	12	0	14	
	5	71	141	13	0	6	
	6	139	207	14	0	8	
	7	62	110	15	0	15	
	8	54	111	16	2	51	

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Appendix A4.-Page 2 of 2.

Month	Day	Number of Chinook	Permits Returned
August	17	0	55
	18	0	18
	20	0	9
	21	0	8
	22	0	5
	23	2	36
	24	0	58
	25	0	16
	26	0	6
	27	0	0
	28	0	0
	29	0	3
	30	0	26
	31	1	53

Appendix A5.-Harvest of chinook salmon by day from the personal use fishery, 1992.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned	
June	1	1	63	July	9	40	106	
	2	0	0		10	63	196	
	3	0	7		11	94	316	
	4	0	0		12	24	164	
	5	66	314		13	22	91	
	6	224	336		14	23	117	
	7	65	123		15	19	127	
	8	1	19		16	27	113	
	9	0	16		17	57	165	
	10	1	35		18	62	333	
	11	34	88		19	13	162	
	12	160	267		20	4	23	
	13	286	466		21	0	18	
	14	155	186		22	0	13	
	15	0	46		23	6	126	
	16	34	59		24	7	153	
	17	76	89		25	14	195	
	18	97	129		26	5	80	
	19	159	247		27	4	9	
	20	320	496		28	7	18	
	21	76	151		29	0	15	
	22	39	78		30	2	60	
	23	72	97		31	8	118	
	24	37	82		August	1	5	132
	25	59	163			2	13	68
	26	122	310			3	0	11
	27	114	458			4	0	0
	28	42	200			5	0	0
	29	24	99			6	0	53
	30	42	149			7	3	68
July	1	39	159	8		0	92	
	2	43	183	9	0	48		
	3	65	287	10	1	16		
	4	65	284	11	0	7		
	5	20	98	12	0	0		
	6	16	91	13	2	33		
	7	12	88	14	2	62		
	8	20	87	15	15	107		

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Month	Day	Number of Chinook	Permits Returned
August	16	6	32
	17	0	12
	18	0	16
	19	0	12
	20	1	22
	21	19	38
	22	2	55
	23	5	22
	24	0	0
	25	1	9
	26	0	10
	27	0	11
	28	1	24
	29	1	36
	30	0	19
	31	1	6

Appendix A6.-Harvest of chinook salmon by day from the personal use fishery, 1993.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
June	1	0	62	July	9	16	158
	2	0	26		10	33	287
	3	5	27		11	9	158
	4	148	291		12	7	85
	5	196	495		13	4	59
	6	127	213		14	6	104
	7	3	26		15	7	96
	8	0	15		16	16	89
	9	0	18		17	8	123
	10	59	185		18	2	56
	11	285	467		19	7	40
	12	311	621		20	2	44
	13	62	194		21	3	37
	14	2	31		22	3	39
	15	37	98		23	14	68
	16	49	139		24	16	104
	17	93	234		25	14	87
	18	170	480		26	0	29
	19	146	631		27	3	37
	20	97	265		28	3	40
21	42	116	29	6	76		
22	27	118	30	12	83		
23	31	118	31	11	121		
24	51	200	August	1	1	76	
25	112	334		2	0	45	
26	83	430		3	1	52	
27	30	199		4	1	53	
28	27	111		5	0	56	
29	30	160		6	3	105	
30	44	155		7	7	154	
July	1	33		191	8	3	84
	2	34		236	9	0	58
	3	43		310	10	0	52
	4	32	278	11	0	61	
	5	16	145	12	2	61	
	6	12	99	13	4	101	
	7	25	141	14	3	171	
	8	13	128	15	0	84	

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Month	Day	Number of Chinook	Permits Returned
August	16	0	36
	17	0	41
	18	0	26
	19	0	35
	20	2	63
	21	5	126
	22	1	65
	23	0	21
	24	1	20
	25	5	21
	26	0	31
	27	0	52
	28	7	76
	29	1	44
	30	0	18
	31	0	8

Appendix A7.-Harvest of chinook salmon by day from the personal use fishery, 1994.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
May	29	1	1	July	5	0	32
	30	0	0		6	3	41
	31	0	0		7	0	61
June	1	0	78		8	52	305
	2	78	117		9	44	327
	3	154	198		10	15	140
	4	210	250		11	0	34
	5	148	154		12	1	37
	6	6	28		13	1	33
	7	8	25		14	12	155
	8	34	78		29	2	220
	9	140	205		15	24	226
	10	163	332		16	15	190
	11	329	515		17	12	22
	12	130	177		18	0	18
	13	53	88		20	0	102
	14	45	76		21	11	131
	15	48	161		22	18	136
	16	71	337		23	14	111
	17	115	299		24	7	63
	18	87	128		25	5	45
	19	66	102		26	2	47
	20	49	74		27	2	90
	21	36	110		28	2	144
	22	62	127		29	2	220
	23	115	257		30	4	115
	24	215	227		31	2	96
	25	163	234	August	1	0	45
	26	142	129		2	0	40
	27	81	124		3	4	38
	28	46	118		4	3	53
	29	35	91		5	1	90
	30	76	204		6	1	95
	31	0	1		7	5	52
July	1	97	256		8	4	36
	2	91	338		9	1	17
	3	38	223		10	3	43
	4	28	155		11	1	25

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Month	Day	Number of Chinook	Permits Returned
	12	1	54
	13	2	84
	14	1	48
	15	0	16
	16	0	17
	17	0	34
	18	0	28
	19	1	111
	20	4	44
	21	0	36
	22	2	29
	23	0	16
	24	0	29
	25	3	69
	26	16	104
	27	11	69
	28	9	29
	29	2	20
	30	3	23
	31	0	12

Appendix A8.-Harvest of chinook salmon by day from the personal use fishery, 1995.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned	
June	1	89	352	July	9	64	134	
	2	153	254		10	40	92	
	3	219	257		11	23	72	
	4	78	118		12	36	86	
	5	2	15		13	70	125	
	6	6	15		14	104	181	
	7	76	87		15	94	243	
	8	173	194		16	70	178	
	9	230	303		17	26	90	
	10	348	412		18	18	100	
	11	234	264		19	5	66	
	12	4	14		20	22	125	
	13	0	6		21	29	166	
	14	5	16		22	53	234	
	15	58	192		23	13	119	
	16	90	301		24	6	48	
	17	121	274		25	4	52	
	18	75	177		26	8	54	
	19	0	0		27	16	103	
	20	5	17		28	9	119	
	21	6	19		29	35	201	
	22	177	225		30	3	102	
	23	263	280		31	0	37	
	24	194	324		August	1	3	47
	25	82	145			2	0	44
	26	1	18			3	5	74
	27	0	18			4	7	97
	28	2	30			5	7	203
	29	110	213			6	4	167
	30	113	192			7	0	12
31	113	192	8	0		0		
July	1	214	402	9	0	0		
	2	90	211	10	1	16		
	3	86	163	11	0	17		
	4	45	122	12	0	0		
	5	36	71	13	0	0		
	6	113	145	14	0	0		
	7	90	182	15	0	21		
	8	117	308					

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Month	Day	Number of Chinook	Permits Returned
August	16	0	0
	17	0	0
	18	0	0
	19	0	0
	20	0	0
	21	0	0
	22	0	0
	23	0	0
	24	0	0
	25	0	0
	26	0	5
	27	0	0
	28	0	0
	29	0	0
	30	0	5
	31	0	0

Appendix A9.-Harvest of chinook salmon by day from the personal use fishery, 1996.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
May	31	1	1	July	8	9	50
June	1	77	134		9	10	44
	2	104	116		10	17	69
	3	0	5		11	14	93
	4	1	2		12	10	89
	5	0	1		13	41	205
	6	2	5		14	32	127
	7	8	18		15	13	57
	8	71	126		16	6	57
	9	402	476		17	16	61
	10	66	103		18	8	57
	11	28	91		19	6	90
	12	83	138		20	17	150
	13	125	223		21	16	136
	14	284	385		22	4	56
	15	385	743		23	1	35
	16	126	287		24	1	46
	17	34	80		25	4	39
	18	46	100		26	12	80
	19	50	109		27	5	132
	20	73	133		28	5	77
	21	179	391		29	3	49
	22	132	390		30	1	23
	23	128	258		31	4	40
	24	37	60	August	1	12	65
	25	27	49		2	3	67
	26	57	80		3	5	113
	27	92	202		4	4	88
	28	43	177		5	3	30
	29	56	242		6	8	21
	30	65	220		7	1	30
July	1	29	75		8	1	52
	2	16	58		9	3	65
	3	30	106		10	6	119
	4	42	150		11	7	120
	5	50	192		12	2	40
	6	65	233		13	2	53
	7	30	132		14	6	46

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Month	Day	Number of Chinook	Permits Returned
August	15	11	65
	16	9	84
	17	6	124
	18	10	118
	19	8	20
	20	0	7
	21	4	10
	22	3	28
	23	8	42
	24	12	85
	25	6	36
	26	7	4
	27	2	3
	28	14	12
	29	1	15
	30	0	18
	31	5	69

Appendix A10.-Harvest of chinook salmon by day from the personal use fishery, 1997.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
June	1	0	0	July	9	18	89
	2	2	2		10	27	79
	3	0	0		11	27	137
	4	4	1		12	36	158
	5	0	1		13	27	106
	6	297	236		14	20	81
	7	372	368		15	10	78
	8	211	203		16	10	68
	9	162	174		17	11	116
	10	128	123		18	19	155
	11	211	177		19	28	251
	12	192	190		20	13	145
	13	418	570		21	3	53
	14	408	571		22	5	59
	15	273	417		23	4	59
	16	78	131		24	7	84
	17	113	178		25	9	109
	18	102	178		26	14	229
	19	171	291		27	6	114
	20	200	345		28	2	70
	21	332	600		29	0	61
	22	162	366		30	3	37
	23	43	82		31	0	41
	24	62	95		August	1	5
25	62	129	2	11		202	
26	66	153	3	2		72	
27	114	273	4	15		63	
28	122	308	5	2		37	
29	68	203	6	1		35	
30	70	116	7	1		43	
July	1	56	98	8		6	78
	2	29	69	9	9	105	
	3	46	135	10	0	67	
	4	91	226	11	2	19	
	5	107	249	12	0	29	
	6	39	105	13	0	28	
	7	21	99	14	0	28	
	8	23	105	15	6	13	

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Month	Day	Number of Chinook	Permits Returned
August	16	0	44
	17	0	13
	18	0	8
	19	0	14
	20	0	8
	21	0	16
	22	13	26
	23	0	62
	24	4	18
	25	1	8
	26	1	10
	27	1	18
	28	4	19
	29	3	36
	30	16	61
	31	15	56

Appendix A11.-Harvest of chinook salmon by day from the personal use fishery, 1998.

Month	Day	Number of Chinook	Permits Returned	Month	Day	Number of Chinook	Permits Returned
June	1	0	0	July	9	55	163
	2	0	0		10	79	216
	3	0	0		11	106	336
	4	0	0		12	53	171
	5	0	0		13	27	119
	6	221	252		14	10	64
	7	295	270		15	29	120
	8	0	3		16	28	104
	9	1	1		17	18	163
	10	156	139		18	24	198
	11	237	175		19	16	132
	12	514	392		20	11	98
	13	703	615		21	10	97
	14	401	400		22	10	99
	15	124	203		23	8	130
	16	108	199		24	17	176
	17	159	219		25	15	231
	18	224	291		26	12	157
	19	268	474		27	6	82
	20	414	664		28	8	93
	21	316	486		29	6	66
	22	144	220		30	3	78
	23	107	199		31	4	143
	24	124	177		August	1	3
25	192	252	2	1		102	
26	143	347	3	1		65	
27	169	401	4	0		53	
28	132	214	5	7		35	
29	94	152	6	5		33	
30	57	133	7	2		75	
July	1	98	231	8		3	138
	2	64	165	9		1	71
	3	94	351	10		1	45
	4	148	335	11	1	50	
	5	44	165	12	1	39	
	6	30	104	13	1	40	
	7	37	99	14	4	52	
	8	56	140	15	1	105	

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Month	Day	Number of Chinook	Permits Returned
August	16	1	64
	17	0	19
	18	2	20
	19	0	14
	20	2	21
	21	3	45
	22	5	89
	23	1	57
	24	1	16
	25	1	13
	26	1	14
	27	3	26
	28	5	39
	29	11	61
	30	7	51
	31	7	13

APPENDIX B

Appendix B1.-A list of data files used to construct tables in this report.

File Name	File Type	Description
88perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1988
89perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1989
90perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1990
91perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1991
92perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1992
93perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1993
94perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1994
95perm.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1995
96PUHV.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1996
97PUHARV.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1997
98PUHARV.xls	Microsoft Excel Worksheet	Personal Use Harvest by Day 1998
92appb02.xls	Microsoft Excel Worksheet	Personal Use/Subsistence Age Data 1992
93pusub.all	ASCII File	Personal Use/Subsistence Age Data 1993
94pusub.all	ASCII File	Personal Use/Subsistence Age Data 1994
95pusub.all	ASCII File	Personal Use/Subsistence Age Data 1995
96appb02.xls	Microsoft Excel Worksheet	Personal Use/Subsistence Age Data 1996
cr-ks-97.xls	Microsoft Excel Worksheet	Personal Use/Subsistence Age Data 1997
97appb02.xls	Microsoft Excel Worksheet	Personal Use/Subsistence Age Data 1997
APPB0298.xls	Microsoft Excel Worksheet	Personal Use/Subsistence Age Data 1998
98pusub.all	ASCII File	Personal Use/Subsistence Age Data 1998
CRsalmon1.xls	Microsoft Excel Worksheet	Personal Use/Subsistence Harvest 1988-1998
Appa0196.xls	Microsoft Excel Worksheet	Commercial Age Data 1996
Appa0197.xls	Microsoft Excel Worksheet	Commercial Age Data 1997
Appa0198.xls	Microsoft Excel Worksheet	Commercial Age Data 1998
1HISTAGE.xls	Microsoft Excel Worksheet	Commercial Age Data 1974-1996
89appb03.xls	Microsoft Excel Worksheet	Sport Fish Age Data 1989
90appb03.xls	Microsoft Excel Worksheet	Sport Fish Age Data 1990
91appb03.xls	Microsoft Excel Worksheet	Sport Fish Age Data 1991

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File Name	File Type	Description
7797Glensfharv.xls	Microsoft Excel Worksheet	Sport Fish Harvest 1977-1997
88appb02.xls	Microsoft Excel Worksheet	Escapement Age Data 1988
Mend1991.xls	Microsoft Excel Worksheet	Escapement Age Data 1991
Mendelt1991.xls	Microsoft Excel Worksheet	Escapement Age Data 1991
dat.xls	Microsoft Excel Worksheet	Aerial Survey Data 1968-1997
98uppercr.xls	Microsoft Excel Worksheet	Aerial Survey Data 1998
98kssurv.doc	Microsoft Word Document	Aerial Survey Data 1998
PUhistory.xls	Microsoft Excel Worksheet	Summary of Personal Use Harvest by Day 1988-1998
CopperHistory.xls	Microsoft Excel Worksheet	Summary of Aerial, Sonar, Commercial, Recreational, Personal Use, and Subsistence Data 1974-1998